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COMMERCIAL FISHERIES REVIEW

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COMMERCIAL FISHERIES REVIEW

A review of developments and news of the fishery industries
prepared in the BUREAU OF COMMERCIAL FISHERIES.

Joseph Pileggi, Editor
H. M. Bearse, Assistant Editor

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UNDERWATER COMMUNICATION CABLES

Charts showing the exact routes of telephone and telegraph cables in the Northwest Atlantic area are now available for the first time to fishermen. Until recently, information about the locations of the cables has been restricted by governments for military reasons. It was noted that a great increase in otter trawling has led to a serious increase in cable breaks. The cable companies hope the release of the detailed charts will help prevent trawling damage to the cables. Copies of the charts can be obtained by writing to American Telephone and Telegraph Company, 32 Avenue of the Americas, New York 13, N. Y.

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* * * * *

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AN INTERIM REPORT OF THE CAPE CANAVERAL CALICO SCALLOP BED

Harvey R. Bullis, Jr.* and Robert Cummins, Jr.**

ABSTRACT

The commercial potential of the large bed of calico scallops (Pecten gibbus) recently delimited by the U. S. Bureau of Commercial Fisheries off Cape Canaveral, Fla., was further investigated during four cruises of the Bureau exploratory fishing vessel Silver Bay between June 1960 and February 1961. Live scallops were found in depths varying from 8 to 40 fathoms, but commercial concentrations were found only between 16 and 28 fathoms. Catch rates during simulated commercial production trials with 8- to 10-foot Georges Bank scallop dredges averaged 20 to 40 bushels of scallops an hour over the entire length of the bed in depths of 17 to 23 fathoms. With the exception of heavy mortality and consequent low catches in the northern two-thirds of the bed in February, no seasonal or north-south geographic trends in catch rate were noticed. The vast size and interrupted nature of the currents of the area make the possibility of simultaneous mass mortalities affecting the entire bed unlikely. Moreover, the eddying currents around Cape Canaveral seem to assure the resettling of scallop larvae in the area, and, therefore, assure a permanent resource. Scallops measuring $2\frac{1}{4}$ to $2\frac{1}{2}$ inches in shell diameter made up the bulk of exploratory catches. Larger scallops were scarce and often in poor condition; smaller scallops, indicative of commercial-size individuals in the near future, were found in all seasons. Meat yields varied from $3\frac{1}{2}$ to $6\frac{1}{2}$ pints per 75-pound bushel of shell stock. Fluctuations in yield were local in nature, closely connected with the physiological condition of the scallops, and could not be correlated with either season or broad aspects of geographical distribution. Prognosis for future commercial development of the bed is good. An early deterrent to commercial development was removed with the appearance of mechanical shucking machines.

INTRODUCTION

Announcement by the U. S. Bureau of Commercial Fisheries in May 1960 of an immense scallop bed off Cape Canaveral, Fla. (Bureau of Commercial Fisheries 1960), immediately created great interest in rapidly developing the resource. So many requests were received by the Bureau for a more comprehensive evaluation of the commercial potential, particularly of year-round production levels and yields, that the exploratory cruise schedule of the Silver Bay was altered to include four additional dredging cruises in the following year.

Principal objectives of the additional cruises were to (a) more closely delineate areas of commercial scallop concentration within the general outline of the bed, (b) obtain data on seasonal catch rates, and (c) investigate geographical and seasonal fluctuations in yield. The cruises were conducted in June (Cruise No. 24), August (Cruise No. 25A), and October-November (Cruise No. 26) 1960, and January-February 1961 (Cruise No. 28). Results were outlined in the reports issued for those cruises.

Fig. 1 - The Silver Bay, Bureau exploratory fishing vessel used to explore the Cape Canaveral calico scallop bed.

This report provides a general year-round picture of production by summarizing the results of 526 dredge hauls made on the Cape Canaveral bed from May 1960 to February 1961 in depths ranging from 7 to 65 fathoms.

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Fig. 2 - Hauling back a Georges Bank scallop dredge.

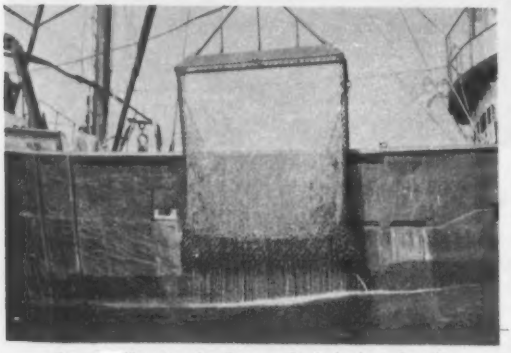

Fig. 3 - Hoisting the Georges Bank dredge aboard.

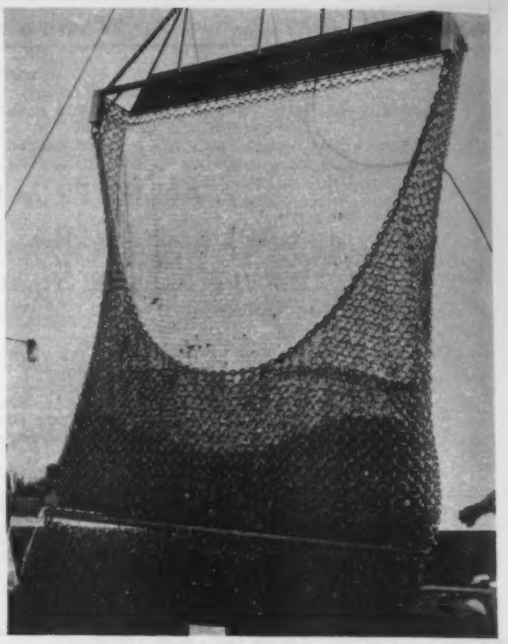

Fig. 4 - Close up of dredge prior to dumping the catch.

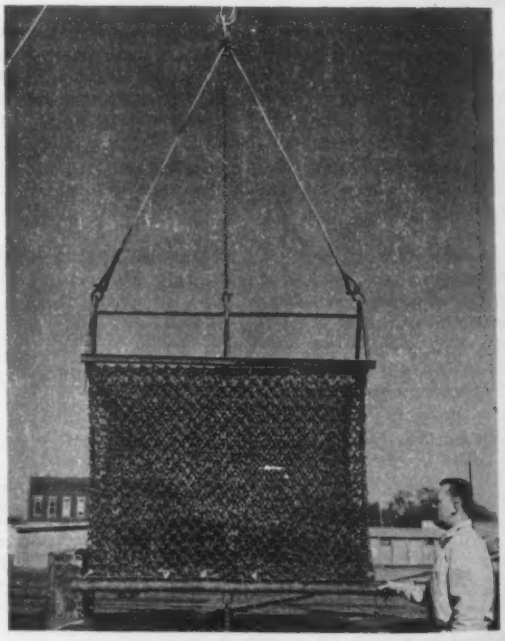

Fig. 5 - A 6-foot tumbler dredge for calico scallop fishing.

FISHING GEAR AND METHODS

The Silver Bay, a New England trawler used for the explorations (fig. 1), is chartered by the Bureau for exploratory fishing off the southeast coast of the United States. The vessel has been described by Bullis and Rathjen (1959) and Captiva and Rivers (1960). Operational port for the Silver Bay and the South Atlantic Exploratory Fishing Station is Brunswick, Ga.

All exploratory dredging in the Cape Canaveral area to date has been accomplished with modified 8- and 10-foot Georges Bank sea-scallop dredges rigged with 2-inch rings and 42-thread, $1\frac{1}{2}$-inch-stretched-mesh cotton liners (figs. 2, 3, and 4). Tests now in progress indicate that a modified 6-foot tumbler dredge (figs. 5 and 6) will produce larger and cleaner catches of calico scallops than the Georges Bank dredges, even though the latter fish a somewhat greater area. Further information on comparative efficiencies of these dredges will be issued when results are complete.

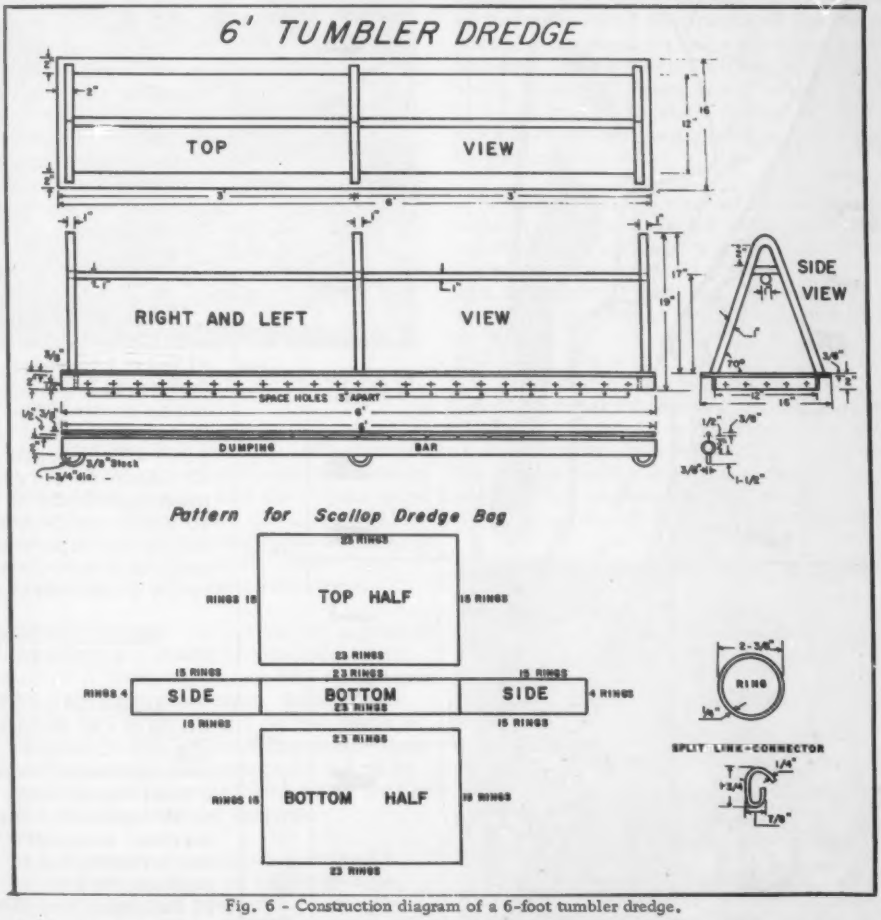

Fig. 6 - Construction diagram of a 6-foot tumbler dredge.

Normally drags were 30 minutes long, but depending on the concentration of scallops and the rate of accumulation of debris, individual drags varied in "on-bottom" time from 10 to 40 minutes. For comparative purposes, therefore, catch figures have been projected to catch rates expressed as bushels per hour.

Owing to the irregular distribution of calico scallops on the bed and to their apparent tendency to occur in long narrow bands, single-vessel exploration of the resource presented some difficulty. This was resolved by dropping marker buoys at the end points of preliminary drags. When the catch from these marked drags equaled or exceeded 5 bushels of scallops an hour--considered the minimum indication of the presence of commercial concentrations--additional drags were made back and forth over the initial course, but at slightly divergent angles. This practice had two advantages: It usually made possible delineation of areas yielding higher catch rates than shown by the initial drag; and made it possible to determine that the relatively small areas between 2 buoys could withstand several days of continuous round-the-clock fishing with no apparent drop in catch rate.

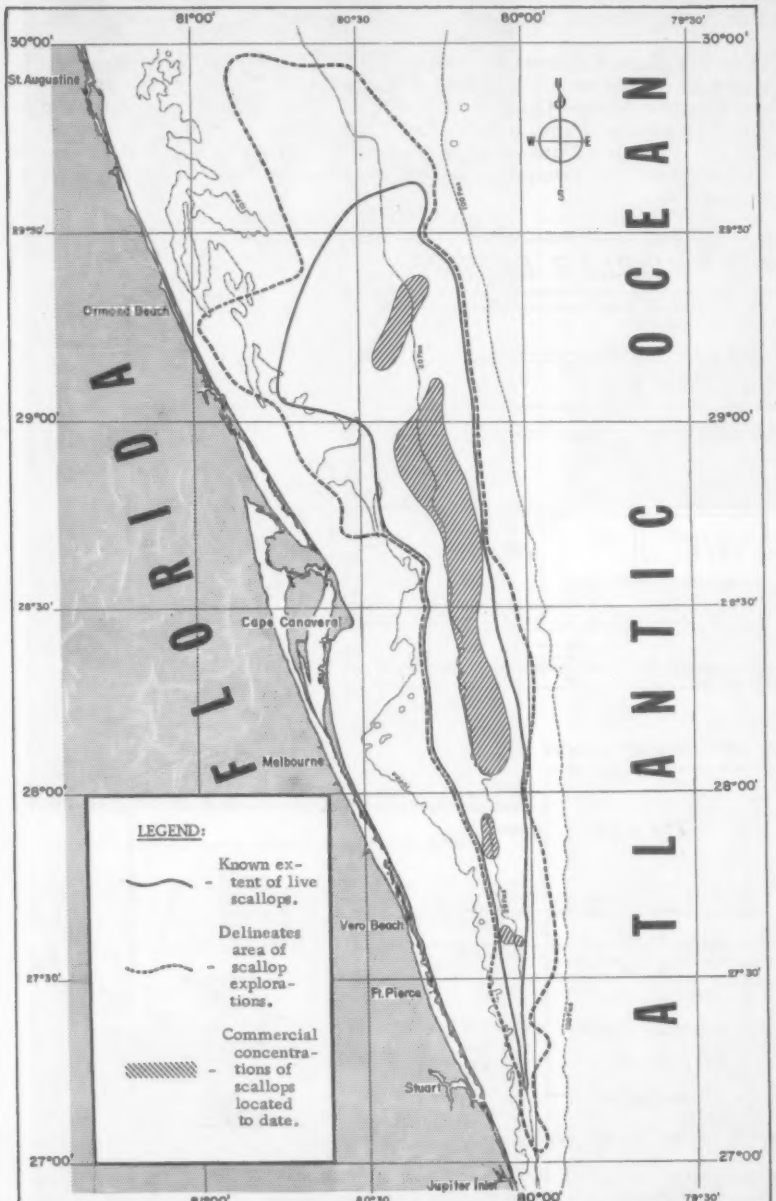

Fig. 7 - Chart of the known reaches of the Cape Canaveral scallop bed.

REGION COVERED

The Cape Canaveral scallop bed extends for at least 150 miles north and south from about 20 miles north of Ormond Beach to Stuart (fig. 7), generally between 15 and 30 fathoms. It reaches a maximum width of about 30 miles off Ormond Beach and tapers gradually to a narrow strip below Fort Pierce.

EXPLORATORY RESULTS

GENERAL DISTRIBUTION OF SCALLOPS (fig. 7): Living calico scallops were found over a total depth range of 8 to 40 fathoms, but commercial concentrations were restricted to the narrower range of 16 to 28 fathoms, and the heaviest catches were found between 17 and 23 fathoms. Although scallops can be found in most

portions of the more restricted ranges, distribution of the heavy concentrations is irregular. This has been shown also for the sea scallop and bay scallop fisheries of other areas, and points out the desirability of working scallop grounds with several vessels rather than with isolated units. Exploratory drags resulting in large catches of dead shell were often followed by catches of 10 to 20 bushels of live scallops suitable for processing. With several vessels working a bed simultaneously, the limits of local areas of heavy scallop concentration could be delineated quickly and precisely, and shifts in the location of the concentrations could be perceived more readily.

CATCH RATES: Catch rates as high as 78 bushels per hour were made, although rates of 20 to 40 bushels per hour represented average production during simulated commercial production trials over the length of the bed between 17 and 23 fathoms. Neither seasonal nor geographic trends in catch rate were apparent except on Cruise No. 28 in late winter when very heavy scallop mortality was observed on the northern two-thirds of the bed. Vast quantities of shell were taken representing scallops so recently dead that parts of the mantle rim (flesh) remained on the still-joined shell halves. Interspersed with much of the dead shell, however, were many small live scallops ($\frac{1}{2}$ to $1\frac{1}{2}$ inches in shell diameter) which possibly represented young-of-the-year additions to the bed.

Fig. 8 - The crew of the Silver Bay shucking calico scallops for technological examination, experimental cooking, and information on yield.

During this period of heavy mortality and consequent low catches in the northern portion, commercial concentrations of medium and large scallops remained available in the southern third of the bed, with the highest catches in the Bethel Shoal area (centered at 27°42' N., 80°11' W.).

The period of investigation has been too short to determine whether widespread mortality is of annual occurrence, but observations made point out that factors influencing spawning, growth, and mortality apparently do not affect all areas of the bed simultaneously. This is probably due to the vast extent of the bed, its wide depth range, and the interrupted current flow created by the existence of the projecting Cape. Moreover, the interruption and eddying caused by the Cape Canaveral projection probably permits repetitive settling of scallop larvae within the limits of the bed, thereby creating a permanent resource.

SCALLOP SIZES: An extensive series of measurements were made of scallops from samples chosen from all areas and seasons in which dredging was conducted. Individuals were classed in 1 of 4 groups on the basis of shell diameter: Small noncommercial--less than $1\frac{3}{4}$ inches; small commercial--$1\frac{3}{4}$ to $2\frac{1}{8}$ inches; medium commercial--$2\frac{1}{4}$ to $2\frac{1}{2}$ inches; and large--greater than $2\frac{1}{2}$ inches.

Individual catches usually contained a preponderance of scallops of uniform size, but smaller numbers of scallops of one or more additional size classes were also invariably present. Grouping the catches by depth interval or north-south progression showed no trends in size distribution, and

Fig. 9 - A clean catch of medium-size scallops (Pecten gibbus).

grouping by seasons showed only that all sizes greater than $1\frac{1}{2}$ inches are present in approximately the same proportion throughout the year.

Scallops of less than $2\frac{1}{8}$ inches are probably of marginal (small commercial size class) or no (small noncommercial size class) commercial importance, but their appearance in large numbers is usually a good prediction of large concentrations of medium scallops within a month or two in the same area. Medium scallops have provided the bulk of exploratory catches over the entire bed and will undoubtedly provide the basic stock for the commercial fishery. Meat size does not increase proportionately with shell diameter beyond the medium class, and large individuals are not only relatively scarce, but are usually in poor condition and unfit for commercial use. The largest shells taken measured about 3 inches in diameter.

FLUCTUATIONS IN YIELD: Meat yields were determined volumetrically from samples taken on each cruise. Using a 75-pound bushel as a standard unit, the yield was measured and expressed as the number of pints of meats per bushel. Figures obtained varied from $3\frac{1}{2}$ to $6\frac{1}{2}$ pints per bushel, and, although no long series of figures for individual meat count are available, pints varied in content from about 50 to 200 meats.

Fig. 10 - A calico scallop meat or eye--the adductor muscle with the viscera removed.

Fluctuations in yield showed no discernible trends and could not be correlated with depth, north-south progression, or season. Extensive variation in yield was found among different areas of the bed in the same season, and in the same areas in different seasons, but with an apparently random pattern. The lowest yield measured was obtained in the spring (April) and the highest in fall (October), but other catches in those seasons show that the extreme catches are not indicative of a trend.

Yield can apparently be correlated best with the physiological condition of the scallops in each area, and condition varies with factors that have yet to be fully investigated.

Size of scallops cannot be considered a major factor influencing yield (the highest and lowest yields measured involved equal-size scallops), but extremely large scallops are often in poor condition and are indicative of low yield for that reason. Possibly these large scallops are at the end of their life span. They are present in all seasons, and the meat (which is actually the adductor muscle) of these large individuals is often so weak that it is incapable of completely closing the shells. The meats are also small, discolored, and unpalatable in appearance. Fortunately, the condition occurred, during the explorations, in small areas only, and a catch composed entirely of large individuals in poor condition would frequently be followed in adjacent drags by catches comprised of individuals of another size group in excellent condition.

COMMERCIAL SIGNIFICANCE

One year of exploratory dredging has not provided sufficient coverage to more than generally delineate the limits of the more promising commercial concentrations of scallops within the boundaries of the Cape Canaveral bed. Nothing is known of annual fluctuations or variations in the fishing concentrations or of the size of the total population of the bed. The enormous size of the bed and the great volume of dead shell in varying conditions of disintegration in-

dicate heavy continuous scallop production over the areas explored to date. Even this, however, needs the confirmation that additional exploratory effort and commercial utilization can provide.

Industry response to previous Bureau delineations of calico scallop beds has been less than enthusiastic, and for the most part such response as has been shown has been short-lived. One early attempt to develop a fishery for these scallops in the Gulf of Mexico has been described by Bullis and Ingle (1958). Another attempt was made on beds investigated off Core Banks, N. C., by the Silver Bay. This attempt resulted in limited utilization in the winters of 1959/60 and 1960/61 by vessels out of the nearby ports of Beaufort and Atlantic, but interest was not widespread.

In contrast, public and industry response to the Canaveral scallop bed has developed rapidly and not only has it been highly enthusiastic, but it has also been sustained. In addition to broad newspaper coverage, many magazine and trade-journal articles have appeared dealing with the delineation and commercial evaluation of the bed. In chronological order, some of these are: Seafood Merchandising, May 1960, p. 11, September 1960, p. 26; The Fish Boat, June 1960, p. 21, July 1960, pp. 41-43, and September 1960, p. 8; World Fishing, August 1960, p. 30; The All Florida Magazine (The Florida Times-Union) August 7, 1960; Florida Business and Opportunity, October 1960, pp. 13-15; Business Week, February 1961, pp. 142-146; Fishing Gazette, April 1961, pp. 34-35, & 56; Florida Journal of Commerce, May 1961, p. 26.

An early inhibitive factor to the quickly-generated commercial interest in fishing the new resource was the problem of shucking. Some research has been devoted to this problem and at least 3 automatic or partially-automatic commercial shucking machines have been privately developed to the pilot-testing stage. Limited work has also been conducted by the Bureau (Bullis and Love 1961) and there are indications that a number of mechanical processing techniques will be forthcoming as the fishery develops beyond the preliminary stages. Tests of samples from exploratory work show that the calico scallop meats withstand vigorous processing methods and freezer storage with no apparent reduction in quality.

Fig. 11 - Rinsing a sample of scallop meats with sea water.

Fig. 12 - Packaging the scallop meats in 1-pint containers prior to freezing.

The resource is readily accessible to the large fleet of shrimp trawlers based along the south Atlantic coast of the United States, and the deep-water ports of Fort Pierce and Port Canaveral are within a few hours' running time from the bed.

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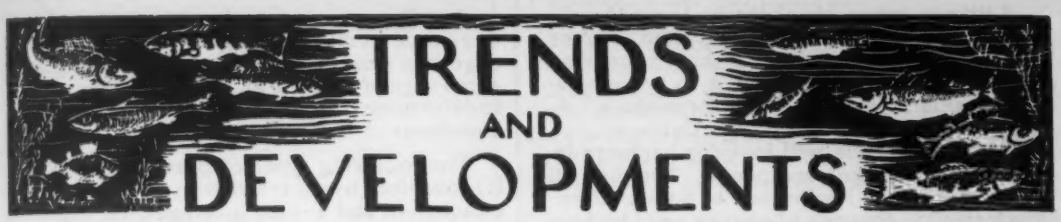
FISH CURING IMPORTANT FACTOR IN DEVELOPMENT OF MARITIME NATIONS

"Fish curing has been an important factor in the development of all great maritime nations. From the Middle Ages until well into the nineteenth century agricultural methods were poor. Livestock were wintered with difficulty, and meat-curing methods were so poor that there was little meat during the winter, also, other protein foods were scarce. Canning and freezing had not yet been developed. The people needed a fairly low-priced protein food which would remain in good condition for some time. Dried, salted, and smoked fish supplied this need. Before the beginning of the industrial age, international commerce was largely in natural products. The wine of Spain was exchanged for the dried and salt fish of England, the Netherlands, and Norway. The smoked herring of England was traded throughout central Europe. Even in the sixteenth century, when England was fighting Spain, her trade in dried fish with Spain was continued. It had been reported that England gained more wealth from cured-fish products in the sixteenth century than Spain obtained in gold from the Americas."

--Principles and Methods in the Canning of Fishery Products, Research Report No. 18 (page 1), U. S. Fish and Wildlife Service.



American Dietetic Association

FOOD AND ATHEROSCLEROSIS TO BE DISCUSSED AT ANNUAL MEETING:

Food and atherosclerosis are two of the subjects listed for the 44th Annual Meeting of The American Dietetic Association in St. Louis, Mo., October 24-27, 1961. Daytime sessions for the first three days will take place at the Kiel Auditorium where an extensive exhibition of food service equipment and food products will be on display. On the last day sessions will be held at the Sheraton-Jefferson, the headquarters hotel.

The latest advances in nutrition will be one of the topics. A session will be devoted to atherosclerosis, and one of the speakers on the subject will present his views on whether or not the American diet should be drastically modified.

Food service administration will be the subject of another session. The executive vice president of the National Restaurant Association, Chicago, will present his views on what is needed in food service management today. Another speaker will discuss standards in precooked frozen foods, and still another the latest convenience foods from the institutional viewpoint. One speaker will talk about new products, various processes, and latest methods of packaging.

Antarctic

RESEARCH PROGRAM FOR 1962 INCLUDES FISHERIES AND OCEANOGRAPHY PROJECTS:

The United States is about to launch its largest and most far-reaching season of scientific research in the Antarctic, and fisheries and oceanography projects are included.

With the start of the Southern Hemisphere summer in October, close to 200 scientists from more than 25 universities, research institutions, and government agencies will undertake research projects on and around the world's most remote and least-known continent.

The National Science Foundation on August 14, 1961, announced the awarding of 53 grants and contracts totaling $4,687,783 in support of Antarctic research. Additional grants yet to be made will bring the total program to about $5,500,000.

The Foundation funds and coordinates the U. S. Antarctic Research Program, which is administered by its Office of Antarctic Programs. The U. S. scientific program is coordinated with the Antarctic programs of other participating nations by the Committee on Polar Research of the National Academy of Sciences. Logistic support for the scientific effort is provided by the U. S. Navy and through cooperative arrangements with other nations.

There will be for the first time a floating research laboratory, the USNS Eltanin, operating in Antarctic waters under a lease agreement between the National Science Foundation and the Military Sea Transportation Service (MSTS).

The Eltanin, an ice-strengthened ship suited for operations in polar seas, will not only be outfitted for oceanographic research, but is intended to accommodate scientists of many disciplines, including meteorology, upper atmosphere physics, marine biology, and submarine geology ($1,027,076 to Military Sea Transportation Service for conversion of vessel for Antarctic ocean research and $383,241 to Columbia University to equip the vessel for geological, geophysical, and oceanographic research in Antarctic waters.)

Little is known about the biology of fresh-water ponds and lakes in Antarctica because of their remoteness and the short time they are ice-free and warm enough to permit living organisms to mature and reproduce. A team of researchers from the University of California at Davis will look for bacteria in many of these lakes and ponds. The men will try to determine limitations to bacterial reproductivity, sources of energy used by bacteria to remain alive, and methods of interaction and reproduction among the free-floating organisms. (Amount of grant, $27,208.)

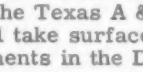
Other biological work will include:

The third year of a Stanford University study of marine animals in the McMurdo Sound area ($43,499).

Study and collection by the University of the Pacific, Stockton, Calif., of the class of arthropods known as Pycnogonida--marine spider-like animals of which the sea-spider is a well-known example ($550).

In two small fresh-water lakes of the Mt. Gran Dry Valley area not far from McMurdo Sound, University of Kansas biologists last season discovered bottom water with temperatures up to 70° and with extremely high salinity. In order to learn why such warm, briny water occurs in permanently ice-covered lakes, a team from Kansas is returning this season to carry out limnological and geochemical investigations of the two lakes ($18,352).

Also, in the field of oceanography, investigators from the Texas A & M Research Foundation will take surface and deep current measurements in the Drake Passage ($50,785).



California

CRAB STUDIES CONDUCTED IN COASTAL WATERS:

M/V "Nautilus" Cruise 61-N-4-7-Crab: Crab fishing was conducted (Feb. 24-Mar. 11; Apr. 1-9; May 27-June 4; June 24-July 3, 1961) by the California Department of Fish and Game research vessel Nautilus in California coastal waters off San Francisco and Bodega Bay to locate nursery areas and follow the development of juvenile Dungeness crabs (Cancer magister). Other objectives were to determine which gear or combination of gear is most effective for taking a complete size range of juvenile and mature crabs; and to determine time of occurrence and relative abundance of different size groups of crabs.

The following types of gear were used: (1) four-foot beam trawl with bottom rake attachment and 1-inch mesh net; (2) eight-foot beam trawl with 1-inch mesh net; (3) ten-foot beam trawl with ½-inch mesh overhang and 1-inch mesh net; (4) seven 30-inch diameter crab traps, woven with 1-inch mesh stainless steel wire, without escape ports; and (5) two standard commercial crab traps of 4-inch mesh without escape ports.

SAN FRANCISCO BAY AREA: The several types of gear were fished at various locations. The ranges of shoulder widths (straight-line distance across the carapace immediately anterior to the outermost spine) of the crabs caught ranged from 8 to 158 mm. Although none of the areas produced significant numbers of juvenile crabs (8 to 100 mm.), the Potato Patch was the most promising. Of the gear used, the 10-foot beam trawl, 30-inch diameter traps, and the commercial traps when used together, produced a complete size range of crabs present in the area. The 4-foot beam trawl with a bottom rake attachment and the 8-foot beam trawl caught some crabs but quantities and size ranges were not as great as when the 10-foot beam trawl was used in the same areas.

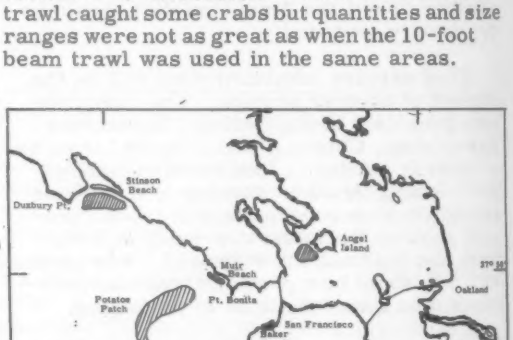


Fig. 1 - San Francisco Bay area sampling locations.

BODEGA BAY AREA: In this area the 10-foot beam trawl, 30-inch diameter traps, and commercial traps were used. Heavy concentrations of juvenile crabs were located in ocean waters between Estero Americano and Estero

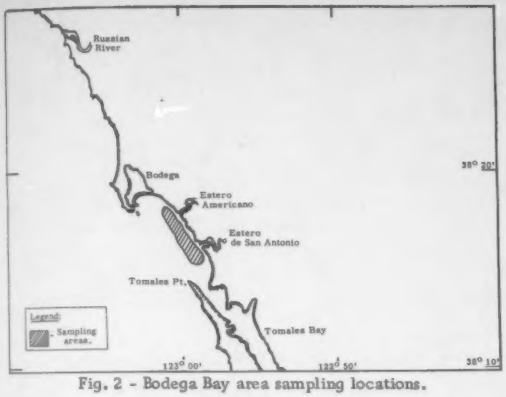


Fig. 2 - Bodega Bay area sampling locations.

de San Antonio. Crabs 7 to 165 mm. wide were taken in the 10-foot beam trawl. In this area 1,000 to 5,000 juveniles were taken per tow. Very few crabs wider than 50 mm. were taken by the 10-foot beam trawl; however, those 50 to 192 mm. wide were readily caught in the 30-inch diameter and commercial traps.

Note: Also see Commercial Fisheries Review, Feb. 1961 p. 13.

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MIDWATER TRAWLING FOR SALMON FINGERLINGS CONTINUED:

M/V "Nautilus" Cruise 61-N-13; and M/V "Al La Rocca" Cruise 61-C-1: The midwater trawl operations of the California Department of Fish and Game research vessels Nautilus (July 4-6, 1961) and Al La Rocca (July 17-21, 1961) were continued in the Carquinez Strait to capture marked salmon fingerlings. All midwater trawling for marked salmon fingerlings was conducted between 8 a.m. and 4 p.m. and each tow was for 20 minutes. Tows were alternate upstream and downstream along the north shore, center, and south shore of the channel.

A total of 70 tows was made during the 2 cruises resulting in a catch of 43 king salmon fingerlings, 3 of which were marked; 2 from Rio Vista releases and 1 from releases made at Coleman Hatchery. The Nautilus was responsible for 36 of the 43 salmon taken during the two cruises.

Incidental catches of northern anchovy (Engraulis mordax) declined to approximately 5 pounds per tow. During June, catches of that species ran as high as 800 pounds per tow.

Note: Also see Commercial Fisheries Review, Sept. 1961 p. 21.

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PELAGIC FISH POPULATION SURVEY CONTINUED:

Airplane Spotting Flight 61-8-Pelagic Fish: The inshore area from the United States-Mexican Border to Pt. Reyes, Calif., was surveyed from the air (July 10-13, 1961) by the California Department of Fish and Game Cessna "182" 9042T, to determine the distribution and abundance of pelagic fish schools.

During the five days, unfavorable weather prevailed along the southern and central California coasts. Low coastal clouds, fog, and thunder storms made it impossible to survey some areas while others were covered under adverse flying conditions.

Despite the poor conditions, 700 anchovy schools were seen, all north of Point Dume. Of this total, 262 schools were observed between Point Dume and Point Arguello; 30 in Avila Bay, 175 in the northern end of Estero Bay, 154 in the north-east corner of Monterey Bay, and 79 at the northern end of Halfmoon Bay.

No sardine or mackerel schools were observed anywhere in the survey area.

Note: Also see Commercial Fisheries Review, Aug. 1961 p. 20.

Central Pacific Fisheries Investigations

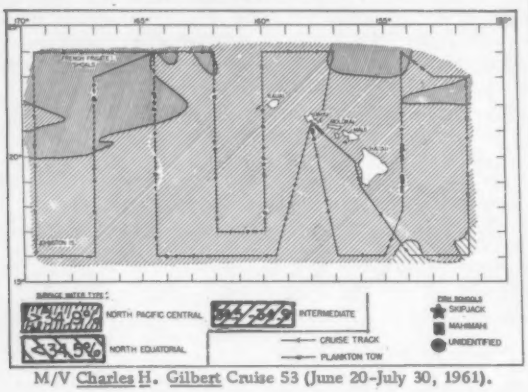
EXPERIMENTAL FISHING WITH MONOFILAMENT GILL NETS FOR SKIPJACK TUNA CONTINUED:

In the feasibility test of the use of monofilament gill nets to catch skipjack tuna in Hawaiian waters, the chartered vessel Broadbill in July 1961 was equipped with a power block, gill-net bin, gill nets, and Loran, and sea trials were held. The vessel and equipment operated satisfactorily and fishing operations were started late in July. However, the few skipjack schools sighted in Hawaiian waters limited the number of trials. From July 23-31, sets were made on only three schools. A total of 25, 2-4 pound skipjack, were taken by pole and line just prior to the setting of the nets. The gill-net catches totaled 31 skipjack. The gill nets did not fish as effectively as anticipated and modifications to both the nets and methods of handling are being made in an attempt to increase their efficiency.

* * * * *

OCEANOGRAPHIC DATA COLLECTED FROM HAWAIIAN ISLAND WATERS:

M/V "Charles H. Gilbert" Cruise 53: A 6 weeks' detailed oceanographic survey of the waters among and surrounding the Hawaiian Islands was completed on July 30 by the U. S. Bureau of Commercial Fisheries research vessel Charles H. Gilbert. The primary purpose of the cruise was to obtain measurements of the temperature and salinity of the surface water for use in the program of research on skipjack tuna (aku) being carried on at the Bureau's Biological Laboratory in Honolulu. Scientists of the Laboratory believe that the seasonal and annual variations in the Hawaiian skipjack catch are related to certain temperature and salinity changes which occur seasonally in the surface waters of the ocean.



M/V Charles H. Gilbert Cruise 53 (June 20-July 30, 1961).

Two thousand drift bottles were released at various points throughout the cruise, as part of a large-scale program, started this year, to gain more knowledge of the pattern of ocean currents in the Hawaiian region.

Tuna schools were less abundant than anticipated in the area covered by the cruise, and biological observations were limited by the scarcity of fish. While at French Frigate Shoals, a field party made a census of the rare Hawaiian monk seal and the sea turtles on the island.

Bathythermograph lowerings were made at three-hour intervals at sea. At each lowering a surface water sample and surface temperature were obtained. The salinity samples were titrated aboard ship.

Standard scouting procedures were followed to collect data on bird flocks and associated fish schools. Thirty-five flocks were sighted. The fish schools associated with these flocks were as follows: 4 skipjack tuna, 1 mahimahi, 1 mahimahi-skipjack, and 29 unidentified.

Scouting conditions were poor in the region east of the Hawaiian Islands due to rough weather and very good during the remainder of the cruise. None of the identified fish schools responded to chumming, therefore, no fish were tagged nor any blood samples collected.

Bait was scarce at all locations scouted with the exception of Kuliouou Stream, Oahu, where tilapia and mosquitofish were present in large quantities.

Forty-nine surface and 22 0-60 plankton tows, using a one-meter net, were made during the cruise. These included tows in low, intermediate, and high salinity water types.

Weather observations were made 4 times daily and transmitted to the Weather Bureau.

Two lures were trolled during daylight hours with the discouraging result of 5 dolphin (Coryphaena hippurus) and one wahoo being landed. Two skipjack, 2 dolphin, 2 little tuna (Euthynnus yaito) and 2 unidentified fish were hooked but not landed.

Eleven adult and 4 young adult Hawaiian Monk seals were counted at French Frigate Shoals. Three large female turtles were observed nesting on East Island. Also, there were 25-30 young adult laysan and blackfooted albatross, and numerous sooty terns on East Island.

Columbia River Fish Passage Research Program

ACCELERATED PROGRAM GETS UNDER WAY:

In July 1961, the new Columbia River accelerated fish passage research program was staffed and plans were completed for the research to get under way.

The fish passage problems in the Columbia River were brought to a head by proposals to build high dams at the Nez Perce and Mountain

Sheep sites on the Snake River. Secretary of the Interior Udall has recommended to the Federal Power Commission that action on approval of these dams be deferred until additional information is available on passage of salmon at high dams and stated that the Department of the Interior would engage in a "crash" program to get this information.

Although the initial stimulus was supplied by the Snake River dams, work will not be limited to that area. Particular emphasis is being given the downstream passage problem, and such devices as louvers, electrical arrays, and "skimmers" will be tested.

Crabs

STUDY TO IMPROVE EFFICIENCY IN PROCESSING PLANTS:

To discuss a new U. S. Bureau of Commercial Fisheries study for improving the efficiency in blue crab-processing plants, a meeting was held on August 1, 1961, at the National Fisheries Institute Headquarters in Washington, D. C., between representatives of the blue crab industry and the Bureau. Through improved processing, which may be achieved through the development of automatic machinery, the production of the processing plants may be increased to enable them to meet the requirements of the new amendment to the minimum-wage-hour law without increasing the cost of their product to the consumer.

Blue Crab

It was agreed that a Government contract would be awarded by the Bureau to a consulting firm for the purpose of conducting a survey of processing methods now utilized in the industry. Upon completion of the survey, the firm will meet with industry and Bureau representatives to present their recommendations to reduce operating costs.

A second phase of the study will then involve utilizing these recommendations for the development of prototype automatic processing equipment which may eventually be utilized by the industry.

Electronics

THERMOMETER DEVELOPED TO RECORD WATER TEMPERATURE AT FISH HOOK:

Maryland scientists in their effort to probe the secrets of fish life have developed a new electronic fishing unit which can tell the temperature of the water at the fish hook while they are fishing. The new thermal hook is called an ankylothermistor; Greek, meaning hook-thermometer. The basic concept of the unit originated with the Director of the Natural Resources Institute of the University of Maryland. Skilled electronics technicians of the Chesapeake Bay Institute of the Johns Hopkins University constructed it to his specifications.

Far from being a mere gadget, it will be put to immediate use in the Potomac River to study the relationship between fishing success and the heated water entering the river from a power plant on the Potomac River. Ever since the plant went into operation, disposing of hot water in the river, fishermen and biologists have been noticing marked changes in fish habits in the area. Now they expect to be able to tell more precisely what effect the hot water has on fishing, and how fishermen can take maximum advantage of the responses of fish to heat.

The new unit, consisting of a black box mounted on a cut-down salt-water fishing pole, looks like a small walkie-talkie radio. In reality, the box holds delicate instruments to magnify the tiny electric current received, and a needle and dial to show the fisherman-scientist the temperature at the hook. The fishing reel is a standard salt-water reel, but the line is a pair of twisted wires with a small thermocouple installed just above the hook. When a fish bites, or during periods when they fail to bite, the operator can turn a dial on the box and note the temperature reading to the nearest half degree.

The new device also is expected to be used in the Chesapeake Bay where scientists and

fishermen have long suspected that knowledge of the temperature preferences of fish can increase the catch.

Federal Purchases of Fishery Products

DEPARTMENT OF DEFENSE PURCHASES, JANUARY-JUNE 1961:

Fresh and Frozen Fishery Products: For the use of the Armed Forces under the Department of Defense, about 1.6 million pounds (value $702,000) of fresh and frozen fishery products were purchased in June 1961 by the Military Subsistence Supply Agency. This was lower than the quantity purchased in May 1961 by 27.9 percent and 41.4 percent under the amount purchased in June 1960. The value of the purchases in June this year was lower by 34.6 percent as compared with May and 41.3 percent less than for June a year ago.

Table 1 - Fresh and Frozen Fishery Products Purchased by Military Subsistence Supply Agency, June 1961 with Comparisons

QUANTITY				VALUE			
June		Jan.-June		June		Jan.-June	
1961	1960	1961	1960	1961	1960	1961	1960
(1,000 Lbs.)				($1,000)			
1,593	2,718	10,872	11,740	702	1,195	5,311	5,986

During the first 6 months of 1961 purchases totaled 10.9 million pounds (valued at $5.3 million)--a decrease of 7.4 percent in quantity and 11.2 percent in value as compared with the same period in 1960.

Prices paid for fresh and frozen fishery products by the Department of Defense in June 1961 averaged 44.1 cents a pound, about 4.5 cents less than the 48.6 cents paid in May and 0.1 cent more than the 44.0 cents paid during June last year.

Canned Fishery Products: The only canned fishery product purchased for the use of the Armed Forces during June this year was a small quantity of canned sardines. In the first 6 months of 1961, purchases of canned tuna were up 83.7 percent and canned sardines were up 7.1 percent as compared with the same period in 1960. Canned salmon purchases are practically all made at end of the packing season (usually September and October).

Table 2 - Canned Fishery Products Purchased by Military Subsistence Supply Agency, June 1961 with Comparisons

Product	QUANTITY				VALUE			
	June		Jan.-June		June		Jan.-June	
	1961	1960	1961	1960	1961	1960	1961	1960
	(1,000 Lbs.)				($1,000)			
Tuna	-	166	2,662	1,449	-	75	1,175	656
Salmon	-	3	2	3	-	2	2	2
Sardine	1	22	90	84	1	9	44	35

Note: Armed Forces installations generally make some local purchases not included in the data given; actual total purchases are higher than indicated because local purchases are not obtainable.

Fish Bone Detection

X-RAY UNIT DEVELOPED TO DETECT BONES IN FISH FILLETS AND PORTIONS:

Progress in the development of equipment that will automatically detect fish bones and reject fish fillets and portions containing bones has been made by a Fitchburg, Mass., firm under a contract with the U. S. Bureau of Commercial Fisheries Technological Laboratory at Gloucester.

The X-ray unit developed for this purpose is capable of detecting most bones in fish portions that are moving on a conveyor belt at speeds up to 25 feet per minute. All bones thicker than 0.012 of an inch (about as thick as three sheets of typewriter paper) were detected in half-inch thick portions. Almost all portioned fishery products produced today are a half-inch or less in thickness. Bones 0.012 of an inch thick or less are essentially harmless in that they become friable when the the fish is cooked. All bones greater than 0.018 of an inch in thickness were detected in portions $\frac{3}{4}$ of an inch thick. These larger bones tend to be annoying in cooked products.

In operation of the test unit, fish portions pass over an X-ray emitter at two speeds--$12\frac{1}{2}$ and 25 feet per minute. The X-rays pass through the fillet or portion and strike a fluorescent screen causing a signal which is detected by a shielded photo-electric cell. This signal is then displayed on an oscilloscope as a line-trace of light. Since the X-ray signal for bones at the fluorescent screen is different from that for meat, this difference shows up as a deflection in the shape of the line-trace. Thus, when a deflection shows up in the line-trace, the operator knows that the sample being exposed to the X-rays contains a bone.

It is expected that additional equipment can be fabricated which will be sensitive to

this bone signal deflection that appears on the oscilloscope. Such sensitized equipment could then be coupled with an automatic rejection system. Thus, the end result would be an automatic detection and rejection system that would guarantee practically boneless fish fillets and portions.

Fish Flour

PROTEIN EFFICIENCY RATING HIGH:

Speaking about a finding that fish flour has a higher protein efficiency rating than skim milk or beef, Senator Saltonstall made the following statement in the U.S. Senate, which was printed in the Congressional Record of August 11, 1961:

"Mr. President, since the earliest times, the fishing industry has been vital to the economy of Massachusetts and to the economy of many other States along our sea coasts.

"But today the industry faces difficult times, partly because U.S. consumers eat much less fish than nutritionists believe their bodies need.

"One dramatic answer, both to this nutritional need and to the problems of the ailing industry, is a new product called 'fish flour.' This is processed from whole fish. It can be made from any kind of fish, and from fish of any sizes. It emerges from the process as a fine, white powder.

"All of our studies to date indicate that this powder is the cheapest source of animal protein in the world. It is an immediate answer to the protein hunger which is such a serious problem in so many parts of the world.

"My colleague, Senator Benjamin A. Smith III, and Representative Hasting Keith, of Cape Cod, and many other Members of the Congress have been working for several months to make this new product more widely understood and available. The Bureau of Commercial Fisheries in the Department of the Interior is an enthusiastic supporter of the product, and is engaged in vital research with funds which we have appropriated recently.

"But we have just received the finest scientific endorsement to date in the form of a report from three food scientists at the University of Illinois--Drs. B. Connor Johnson, V. Chalam Metta, and Harold E. Schendel, of the division of animal nutrition at that university.

"They have found that fish flour has a higher protein efficiency rating than skim milk or beef; that it has no harmful effect, even when fed as the sole source of protein; that standard East Indian diets showed growth improvements of from 50 to 100 percent when supplemented with fish flour; and that 3 percent fish flour can be added to standard diets without detection by the consumer.

"Because of the enormous significance of this report to our fishing industry and to the solution of the world food problem, I ask, Mr. President, that the summary and conclusions of these scientists be printed in the Record at the conclusion of my remarks.

There being no objection, the statement was ordered to be printed in the Record, as follows:

"Summary and Conclusions:

"An odorless, defatted fish flour, evaluated for its protein quality by the Mitchell method, was found to have a biological value of 8 percent. At the 10 percent protein level in diet, its protein efficiency ratio (gram gain per gram protein consumed) was 3.24 as compared to 2.85 for skim milk and 3.15 for beef.

"When fed as the sole source of protein, fish flour proved as adequate as casein for the reproduction and general performance of rats through four generations. Examinations of 11 organs and tissues from animals of the first through third generations revealed no differences between the groups.

"The supplementing value of fish flour added to four East Indian diets was studied with growing rats using Mitchell's pair-feeding method. At 1- and 3-percent supplementation, growth improvements were 13 to 76 percent and 43 to 145 percent, respectively, over the controls. The protein efficiency ratios of all but one of the cereal diets were also improved significantly. . .by 1 and 3 percent fish flour supplementation, indicating a better amino acid mixture of the supplemented diets.

"Fish flour supplementation was also shown to improve the protein efficiency ratio of experimental East Indian diets containing both a low-protein corn (from 0.172 to 0.242) and of a high-protein corn (from 0.245 to 0.320), indicating again that an improved amino acid pattern had been achieved.

"An organoleptic test indicated that a panel of 26 Indian students was unable to detect the presence of 3 percent fish flour in 3 Indian diets.

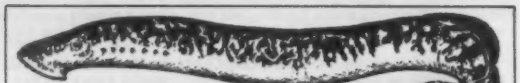
"All these data support the view that a good fish flour could be a real significance in helping to supply the protein needs of the world."

Great Lakes Fishery Investigations

Following are some of the highlights of the studies conducted by the Ann Arbor (Mich.) Biological Laboratory of the U. S. Bureau of Commercial Fisheries during April-June 1961:

SEA LAMPREY RESEARCH: Bioassays on water samples from the 18 representative streams tributary to Lakes Huron and Michigan were continued. The periodic bioassays were also continued on water from Lake Huron. This work is part of the long-term study of the seasonal loss of biological activity of the nitrophenols.

Ripe individuals of the following 4 of the 5 species of lampreys present in the Great Lakes have been artificially spawned in the laboratory: sea lamprey (Petromyzon marinus); silver lamprey (Ichthyomyzon unicuspis); American brook lamprey (Lampetra lamottei); and the northern brook lamprey (Ichthyomyzon fossor). To date we have been unable to obtain ripe individuals of the chestnut lamprey (Ichthyomyzon castaneus). Fertilized eggs of the available species are in various stages of development; 2 species have started to hatch. Periodic samples



will be taken of the ammocetes after hatching in an attempt to develop methods of identification.

A considerable number of sea lamprey larvae will be exposed in the laboratory to a wide variety of environmental conditions to learn the effects on development and survival. This lamprey-culture may also provide specimens for bioassay work.

Twenty-one 24-hour experiments were made with larval lampreys and several chlorinated benzenes as part of a project to develop a chemical-survey technique. Two of the compounds tested, orthodichlorobenzene and paradichlorobenzene, show considerable promise in causing larvae to emerge and in preventing re-burrowing.

Six compartmented troughs have been constructed and installed for use in a study of the extent and factors of movements of larval lamprey. This research is to include also the investigation of possible upstream movement of larval lampreys in relation to swimming speed.

SEA LAMPREY CONTROL: Good weather, a welcome contrast to last year, permitted extensive field activity during the quarter. The majority of electrical barriers were in operation by the beginning of the period and chemical-treatment crews from both the Marquette and Ludington stations were in the field during April. High-water levels limited ammocete surveys during part of April, but conditions were favorable by May.

Staff from the Marquette and Ludington stations treated 18 Lake Michigan tributaries. These streams are located in Charlevoix and Emmet Counties on the northeast coast and in Mackinac and Schoolcraft Counties on the north shore. Streams of the Lower Peninsula required approximately 31 pounds of active ingredient per second foot of water, more than twice the 14.5 pounds needed for Upper Peninsula streams.

The routine bioassays were continued on 13 streams tributary to the east shore of Lake Michigan; 28 tests were conducted by June 8. The working range for treatment has improved considerably over the previous quarter. Minimum lethal concentrations have fluctuated erratically, however during the past month.

The surveys of ammocete distribution have advanced notably. Fifty-two watersheds tributary to the east shore of Lake Michigan were checked during the quarter and surveys were completed on 48. Only 10 contained sea lamprey larvae.

Ammocete surveys were completed on 5 rivers on the north shore and 7 rivers on the west shore of Lake Michigan. Five additional west-shore streams were checked to determine presence or absence of sea lamprey ammocetes; 1 of the 5 was infested.

Identification of larvae caused difficulties for survey crews on the east shore of Lake Michigan. Ammocetes, believed to be American brook lampreys, were encountered which had pigment-distributions characteristic of sea lampreys. This problem was greatest with larvae collected from the Manistee River drainage.

A new 80-place mobile bioassay laboratory has been completed and placed in operation. The acquisition of this unit provides both treatment crews with bioassay facilities.

A total of 29 barriers were placed in operation along the south shore of Lake Superior to measure the runs of adult sea lamprey. (Twenty-three of the barriers were installed prior to the beginning of the quarter.) The last device was in operation by April 24. Although high water and flooding have caused occasional difficulties, conditions have been immeasurably better than last season.

Captures of adult sea lampreys totaled 59,320 by June 23; these same devices had produced 30,721 adults during the same period in 1960. The 1961 catch represents an increase of 93 percent. The year's run also exceeds that of 1959 when 42,248 individuals were caught during the same period. The in-

crease in numbers of sea lampreys has occurred throughout Lake Superior.

The search is being continued for ammocetes in Lake Superior streams which have been chemically treated. Results to date indicate survival of a few sea lamprey ammocetes in 18 of the treated streams. Periodic collections are also being made from re-established populations. A series of collections made last October of young-of-the-year in 13 streams was duplicated during May. The rate of growth in different streams varied considerably.

COMMERCIAL LAKE TROUT FISHERY CENSUS IN LAKE SUPERIOR: The 1961 census of the commercial lake trout fishery in Lake Superior was started in March. The expansion of the census to Whitefish Bay completes coverage of all major fishing areas on the south shore. The incidence of both fresh and old lamprey scars has been generally higher than last year. Average weights of trout in the commercial catch have fallen to all-time lows. The quality of fishing has been poorer than in 1960 although there was some improvement in Wisconsin in the early spring. No records were obtained from Whitefish Bay in 1960, but fishermen there report a very substantial improvement in fishing this spring. Although the incidence of old lamprey scars in this area is the highest of all the south shore ports, fresh scarring was only 1.9 percent--by far the lowest at any locality.

The number of fin-clipped hatchery trout caught this spring was more than triple that of the spring of 1960; the catch has dropped, however, in Wisconsin. The decrease in fin-clipped fish in Wisconsin is probably a reflection of failure to mark the 1957 plant. Large numbers of fin-clipped fish were taken this spring in Whitefish Bay (nearly 25 percent of the catch). Almost all of these fish were from the 38,000 fish planted in the Bay in 1958. Most unmarked fish in the catch in Whitefish Bay are the proper age to be from the 1956 and 1957 plants (inside the Bay) which were not fin-clipped. Planted trout from Wisconsin are as numerous off Munising and Grand Marais, Mich., as are fish planted in the immediate area. Indeed they are common along the entire south shore except in Whitefish Bay. A most unusual capture was that of a 6.4-inch trout planted in the fall of 1960 at Port Arthur, Ont., and caught at Grand Marais, Mich., in April.

The first results in a test of relative efficiency of nylon and cotton gill nets, fished in separate gangs, indicate roughly a 2 to 1 advantage of nylon nets for taking lake trout.

A total of 463,378 lake trout yearlings (average length 5.5 inches) were fin-clipped at Pendills Rearing Station prior to their release in Lake Superior in June.

YELLOW PIKE TAGGING IN GREEN BAY-SAGINAW BAY: The annual spring yellow pike or walleye tagging in conjunction with the Institute for Fisheries Research, Michigan Department of Conservation, Lake Michigan's Green Bay and Lake Huron's Saginaw Bay, was conducted in late April and early May; 1,814 fish were tagged and scale samples were taken from 950 of them. Trap nets were set in northern Little Bay de Noc, and on Stoney and Poplar Points just east of Nahma in Big Bay de Noc. An attempt to capture yellow pike in Wilsey Bay east of Peninsula Point, with trap nets, produced very few fish. Yellow pike were caught with a dip net below the lamprey weir on the Whitefish River. Fish were also tagged at Dry Shoal northeast of Bark River; these fish were caught by a commercial fisherman.

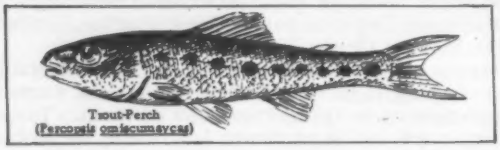
Yellow Pike
(Stizostedion vitreum vitreum)

Additional information on tag recoveries gives further evidence of numerous yellow pike spawning populations in the Bay de Noc area. These groups seemingly return to the same spawning area year after year.

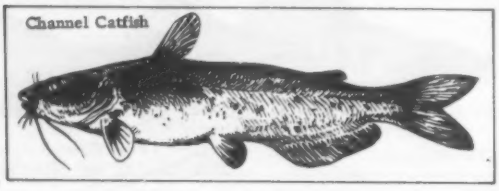
* * * * *

HATCH AND SURVIVAL IN 1961 FAIR FOR MANY SPECIES IN LAKE ERIE: The 1961 hatch and survival appears fair to good for many Lake Erie species, according to the Biological Laboratory, U. S. Bureau of Commercial Fisheries, Ann Arbor, Mich. Based on exploratory fishing in July, yellow perch were most abundant, and considerable numbers of smelt and white bass were taken. The largest collections of white

bass were from the extreme western end of Lake Erie (Bono to Monroe), whereas smelt were concentrated in the Island region and deeper waters to the east. Young yellow pike or walleyes were fairly common in most areas, although not quite as plentiful as in 1959. Varying numbers of young-of-year alewives, gizzard shad, spottail shiners, and trout-perch were collected. The young fish of all species were somewhat smaller than for corresponding dates in other recent years, presumably because of the cool weather during last May and June.


Trout-Perch
(Percopsis omiscomaycus)

Older fish taken in July included yellow perch, smelt, sheepshead, white bass, channel catfish, bullheads, carp, and goldfish. Only yellow perch (1959 year-class) were collected in quantity. The average length of these 2-year-old perch was only about 7.3 inches. Consequently, few were expected to reach the minimum legal length of 8.5 inches by September, when Ohio's fall commercial fishing season begins.


Channel Catfish

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YELLOW PIKE TAGGING EXPERIMENT:

A mid-season assessment of the Lake Erie yellow pike tagging experiment shows that of the 4,000 yearling pike tagged in the spring of 1960, 439 (11.0 percent) were recaptured as of July 1961--334 in 1960, and 105 during the first 7 months of 1961. The 1961 returns have demonstrated a pronounced movement of yellow pike to the extreme western end of Lake Erie and into the Detroit River and northward. One fish was recovered in Saginaw Bay, some 236 miles from the locality of release. Only 3 tagged yellow pike were recaptured east of Cleveland.

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LAKE MICHIGAN FISH POPULATION SURVEY CONTINUED:

M/V "Cisco" Cruise 4: The chub (Leucichthys sp.) population survey in Lake Michigan was continued (July 18-August 1, 1961) by the U. S. Bureau of Commercial Fisheries research vessel Cisco. The primary purpose was to compare chub populations in the Charlevoix-Manistique region with populations in 1932 and in 1955. The comparisons were made possible by duplicating (as to time of year, depth, gear, and location) sets of linen gill nets made by the Bureau's research vessel Fulmar in 1932 and again by the Cisco in 1955. Nets of $2\frac{1}{2}$-, $2\frac{5}{8}$-, and $2\frac{3}{4}$-inch mesh were set at 50 fathoms off Charlevoix, off Manistique, and in midlake between those ports. In 1955, chubs (Leucichthys hoyi) were appreciably more abundant--except at Charlevoix--than in 1932; considerably fewer chubs of other species (L. kiyi, L. reighardi, L. zenithicus, L. alpenae) were taken; and the chubs caught in 1955 were of much smaller average size. During the present cruise, many more chubs (L. hoyi) were taken at all three locations than in either 1932 or 1955; far fewer other chubs were caught than in 1932 (fewer in midlake than in 1955 but slightly more off Charlevoix and Manistique); and the chubs were of about the same average size as in 1955, except off Manistique, where they were larger (but not as large as in 1932).

Chub
(Leucichthys sp.)
Chub
(Leucichthys spp.)

Regular gangs of nylon gill nets (50 feet each of $1\frac{1}{4}$- and $1\frac{1}{2}$-inch mesh and 300 feet each of 2-, $2\frac{3}{8}$-, $2\frac{1}{2}$-, $2\frac{3}{4}$-, 3-, $3\frac{1}{2}$-, and 4-inch mesh) were set at 25 and 50 fathoms off Charlevoix and Manistique. The catches were light at 25 fathoms, but moderately heavy at 50 fathoms.

Two half-hour tows with a 50-foot balloon trawl at 30 fathoms off Charlevoix (in Little Traverse Bay) yielded 108 and 115 pounds of chubs; and one tow at 50 fathoms off Manistique netted 97 pounds. Practically all of the chubs were bloaters. Except for 10 pounds of deep-water sculpins in the 50-fathom tow, few fish other than chubs were taken.

Hydrographic observations were made at 40-fathom stations off Charlevoix, off Manistique, and in midlake between the two ports. Thermal stratification was present in all areas. Surface water temperature, the highest thus far this year, ranged from 15.3° to 21.1° C. (59.5° to 70.0° F.).

M/V "Cisco" Cruise 5: Much of this cruise (August 8-21,1961) was devoted to fishing linen gill nets off Ludington, Mich., so that existing chub populations in that area might be compared with those present in 1931-32 and 1955. The linen gill nets were fished exactly, as to mesh sizes ($2\frac{3}{8}$-, $2\frac{1}{2}$-, $2\frac{5}{8}$-, $2\frac{3}{4}$-, 3-inch, stretched), depth (25 and 60 fathoms), location, and almost exactly as to time of year, as were the sets of the U.S. Bureau of Fisheries research vessel Fulmar in 1931-1932 and the Cisco in 1955. A similar study was conducted in the Charlevoix and Manistique, Mich., areas during cruise 4. The differences between the 1955 and the 1931-1932 periods were striking off Ludington. In 1955, the average size of the chubs was much smaller than in 1931-32, chubs (Leucichthys hoyi) were much more plentiful, and other chubs (L. kiyi, L. reighardi, L. zenithicus, L. alpenae) were decidedly less abundant at both 25 and 60 fathoms. In 1931-1932 somewhat more than 40 percent of the chub catch was other than L. hoyi, but in 1955 the catch had dropped to about 10 percent. Chubs other than L. hoyi are even fewer now than in 1955, especially at 60 fathoms, but the size distribution has not changed appreciably.

Regular gangs of nylon gill nets (50 feet each of $1\frac{1}{4}$- and $1\frac{1}{2}$-, 300 feet each of 2-, $2\frac{3}{8}$-, $2\frac{1}{2}$-, $2\frac{3}{4}$-, 3-, $3\frac{1}{2}$-, and 4-inch mesh) were set at 25 and 50 fathoms off Frankfort, Mich. The catch was rather light at the former depth and very light at the latter. The 25-fathom set took 330 L. hoyi, 18 L. kiyi, 2 L. alpenae, 1 L. zenithicus, 2 L. reighardi, and 4 lake herring (L. artedii); the 50-fathom nets took 85 hoyi, 21 kiyi, 6 L. reighardi, 1 L. alpenae, 1 lake herring, and 4 deepwater sculpins. Several of the L. reighardi in these nets and the ones off Ludington were ripe or nearly ripe. This situation is considered unusual, since the spawning season for this species in Lake Michigan is ordinarily late April to early June. Many L. reighardi were, in fact, spawning during that time this year.

Half hour tows with a 50-foot balloon trawl were made south of Frankfort (off Arcadia) at 10, 13, 14, 25, 35, and 50 fathoms. Chub catches were 10, 27, 124, 184, 406, and 262 pounds, respectively. The catch at 35 fathoms, over 99 percent L. hoyi, was the largest thus far this year. Smelt and alewives were common at the shallowest 3 depths. The largest catches were 48 pounds of smelt and 113 pounds of alewives. Thirty-six pounds of deep-water sculpins were caught at 50 fathoms. A single tow of 30 fathoms in Little Traverse Bay (near Charlevoix, Mich.) took 138 pounds of chubs.

Hydrographic information was collected at a 40-fathom station off Frankfort. Surface-water temperatures were mostly 18° to 20° C. (64.4° to 68° F.). Near the end of the cruise, however, following strong north winds, a surface-water temperature of only 13.6° C. (56.6° F.) was recorded near Frankfort. An upwelling, the extent of which was not determined, was apparently occurring.

Note: Also see Commercial Fisheries Review, Sept. 1961 p. 30.

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WESTERN LAKE SUPERIOR FISHERY SURVEY CONTINUED:

M/V "Siscowet" Cruise 4: Midsummer environmental conditions were studied by the U. S. Bureau of Commercial Fisheries research vessel Siscowet (July 17-27, 1961) at three limnological stations in western Lake Superior. Hydrographic collections included: records of water temperature; Secchi-disc readings; water samples for chemical analyses; and bottom and plankton samples. Information was gathered also on the vertical distribution of fish and on distribution and survival of planted lake trout; larval stages of various species of fish were collected; and blood samples were taken from several Lake Superior species for electrophoretic studies.

Stations visited were: north of Sand Island; south of Stockton Island; Pike's Bay; Frog Bay; northwest of Oak Island; northwest of Ironwood Island; Punky Bay; east of Gull Island; north of Clinton Point; southeast of Bear Island; and Siskiwit Bay.

Surface-water temperatures had warmed considerably since the last cruise to nearly 70° F. in some areas. Bottom temperatures remained near 40° F.

A standard gang of gill nets set north of Sand Island (48 fathoms) caught mostly chubs

and smelt. Gill nets set south of Stockton Island (18 and 25 fathoms) took small numbers of whitefish, lake herring, and lake trout. Three $1\frac{1}{4}$-inch-mesh gill nets which were suspended 12 feet below the surface (water depth 28 fathoms) north of Sand Island, in an attempt to capture small lake herring, caught 50 smelt, 10 chubs, and 10 herring.

About 25 trawl tows (average duration, 15 minutes) at depths ranging from 7 to 60 fathoms yielded generally small catches of smelt, chubs, sticklebacks, and cottids. The most successful catch was in Punky Bay (18 fathoms) where 19 small lake trout were captured of which 18 were hatchery-reared (fin-clipped).

Trawl tows near Cornucopia captured hatchery-reared lake trout, which had been planted near shore in the spring, at distances as great as 15 miles from the nearest planting site.

As of late July the M/V Siscowet had captured 102 small trout (excluding fish of the 1961 plant) in the Apostle Island area; 85 (83 percent) were fin-clipped and 62 (73 percent) of the marked fish were from the 1960 Bayfield plant.

Blood samples were collected from lake herring, lake trout, whitefish, pygmy whitefish, sculpins, smelt, and several forms of chubs for electrophoretic studies at the University of Wisconsin. In these studies, the haemoglobin of fish blood is subjected to an electrical current; fractions of the haemoglobin then separate into distinct patterns which are characteristic for each form or species. It is hoped that these studies will help answer some of the perplexing problems in chub identification.

A skin diver observed the action of the converted midwater trawl which was being towed about 10 feet below the surface. He reported that the trawl was completely open to a diameter of about 12 feet.

Note: Also see Commercial Fisheries Review, Aug. 1961 p. 27.

Gulf Fishery Investigations

CONTRACTS LET FOR BIOLOGICAL RESEARCH IN GULF OF MEXICO:

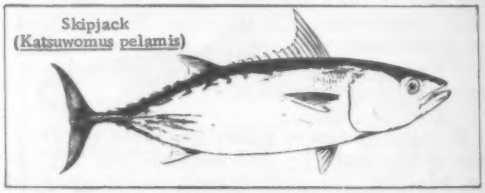
A new contract for vessel charter was awarded during August to the M/V Belle of Texas by the U. S. Bureau of Commercial Fisheries. The 75-foot vessel will be utilized by the Bureau's Galveston (Tex.) Biological Laboratory for deep-sea shrimp trawling.

Two research contracts for biological research in the Gulf of Mexico under the direction of the Bureau's Laboratory at Galveston have been renewed for the fiscal year beginning July 1, 1961. The contracts cover the study of the egg and larval stages of pink shrimp and their distribution by currents (with the University of Miami), and the effects of environmental factors on the development and survival of larvae of blue crab (with Duke University).

Hawaii

SKIPJACK TUNA LANDINGS, JANUARY-JULY 1961:

Landings of skipjack tuna (mostly 18-28 pound size) in Hawaii during July 1961 were about 2,430,000 pounds or 320,000 pounds under the landings for the preceding month. However, the July 1961 landings were close to 0.5 million pounds above the 1948-58 average landings for the month.



Of the total landings, 6 percent were below 8 pounds, 11 percent between 8 and 15 pounds, and 83 percent above 15 pounds. No marked changes in size composition were observed during the month. The changes which did occur took place in the latter half of the month and were (1) a slight increase in percentage of small skipjack; (2) a slight decrease in the size of the large fish; and (3) a decrease in the number of fish in the upper modal group.

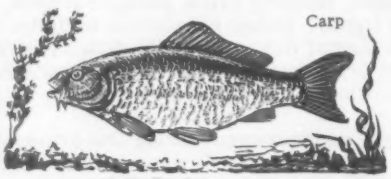
Total estimated landings for January-July 1961 were 8.1 million pounds or about 2.2 million pounds above average, almost twice the 1960 landings for the same period, and one million pounds above the total 1959 catch. The increase over 1959 was largely due to the high catches in June of this year.

Catches for Oahu boats averaged 10,382 pounds per trip. However, the catch was reduced in the latter half of July, the total landings being about one-third of those made during the first half of the month.

Missouri

COMMERCIAL FISHERY LANDINGS, 1960: Commercial fish landings in Missouri during 1960 amounted to 350,200 pounds with a live-weight value at $81,000, according to a biologist for the Missouri Conservation Commission.

Mississippi River fishermen reported landings of 178,180 pounds, Missouri River fishermen 155,320 pounds, and St. Francis River fishermen 16,700 pounds.



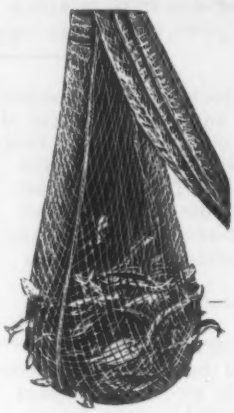
Carp

Carp is Missouri's most important commercial fish, comprising about 45 percent of the total catch, the biologist reported. Buffalofish ranked second with about 23 percent of the landings, followed by flathead catfish, drum, blue catfish, gar, paddlefish, quillback, channel catfish, sturgeon, suckers, bowfin, bullheads, and eels.

North Atlantic Fisheries Investigations

TRAWL NETS OF DIFFERENT DESIGNS TESTED FOR ESCAPEMENT OF GROUNDFISH: M/V "Delaware" Cruise 61-12: A study of the differential escapement of haddock, whiting, and other species of groundfish from trawl nets of special design was made by the U. S. Bureau of Commercial Fisheries research vessel Delaware during a 15-day cruise that ended August 3, 1961. Previous experiments using the underwater television camera to observe the behavior of various species of fish in otter trawls had indicated that haddock and whiting react differently to their containment within the net and that this differential behavior might be utilized in developing special types of nets which would allow the escape of small, undersized haddock while at the same time retaining most of the whiting of marketable size.

A large number of experiments were conducted on this cruise. In some of the experiments conducted during the cruise, a "window" was constructed in the upper part of the cod end of the net. This window was in some cases simply a large hole. In other cases, it was a large area covered with a very large mesh rather than the small mesh of which the rest of the net was constructed. The window, in turn, was covered with a special small mesh cod end to recover any fish that passed through the window. In some experiments a deflector consisting of large mesh netting was hung from the upper part of the net and extended halfway to the bottom of the net.



Cod end.

The results of the experiments substantiated the theory that different species come into the net at different levels and have different reaction patterns in attempting to escape. Haddock, cod, and sea herring tend to come in high in the net and were deflected through the window in substantial percentages. Other species, such as whiting, tend to come into the net low down and were not deflected through the window in such high percentages.

Another experiment in which the cod end was divided horizontally by a sheet of netting showed, in general, the same difference in behavior pattern of the different species of groundfish. Although the experiments corroborated previous ideas as to the differential behavior of different species, it was not possible in this series of experiments to develop any net which might, in a practical way, allow most of the small haddock to escape while retaining most of the marketable whiting.

Further experiments will be conducted on future cruises to gain more information on this aspect of fish behavior which may be of extreme importance to the conservation of the groundfish.

Additional experiments were conducted on the size selectivity of whiting using 3-inch and $3\frac{1}{2}$-inch mesh nets to provide additional information on the selectivity of this species. This information is necessary in developing a recommendation for a mesh regulation for the whiting fishery.

Blood samples of haddock, cod, and whiting were obtained for racial analyses. A total of 160 dogfish were tagged in Ipswich Bay. Dogfish in large numbers were observed at the surface at several localities feeding on various crustacea and on fish discarded by the commercial fleet. A number of dogfish samples were taken for biological examination.

Water temperatures on the bottom in depths of 25 fathoms and over in the Ipswich Bay and offshore Cape Cod areas were unusually low for the time of the year--only about 37° F. instead of 39° F. to 40° F. as in past years. These relatively cold bottom water temperatures may explain, at least in part, the late arrival of whiting on the inshore grounds this year. Temperature transects were made off Gloucester, Mass., and into South Channel off Nauset Light on Cape Cod.

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DATA COLLECTED ON GEORGES BANK SEA SCALLOPS:

M/V "Delaware" Cruise 61-13: Information on the populations of sea scallops found on Georges Bank was collected by the U. S. Bureau of Commercial Fisheries research vessel Delaware during a 10-day cruise that ended on August 19, 1961. The cruise was part of the Canadian-United States cooperative program to obtain the scientific data necessary for preparing a proposal on sea scallop management for submission to the International Commission for the Northwest Atlantic Fisheries in 1962.

Information was collected on the different sizes of sea scallops caught with dredges with 3-, 4-, or 5-inch rings. A total of 112 tows of 10 minutes each were made at selected stations and about 112,000 scallops were collected and measured. The data collected will be analyzed to determine the escapement of scallops through rings of different sizes. Shell samples and live scallops were brought back to the laboratory for further study. In addition to scallop measurements, sex ratios, length-weight ratios, and the condition of the gonads were recorded.

North Pacific Exploratory Fishery Program

WATERS OFF OREGON AND WASHINGTON SURVEYED FOR ALBACORE AND OTHER SPECIES OF PELAGIC FISH:

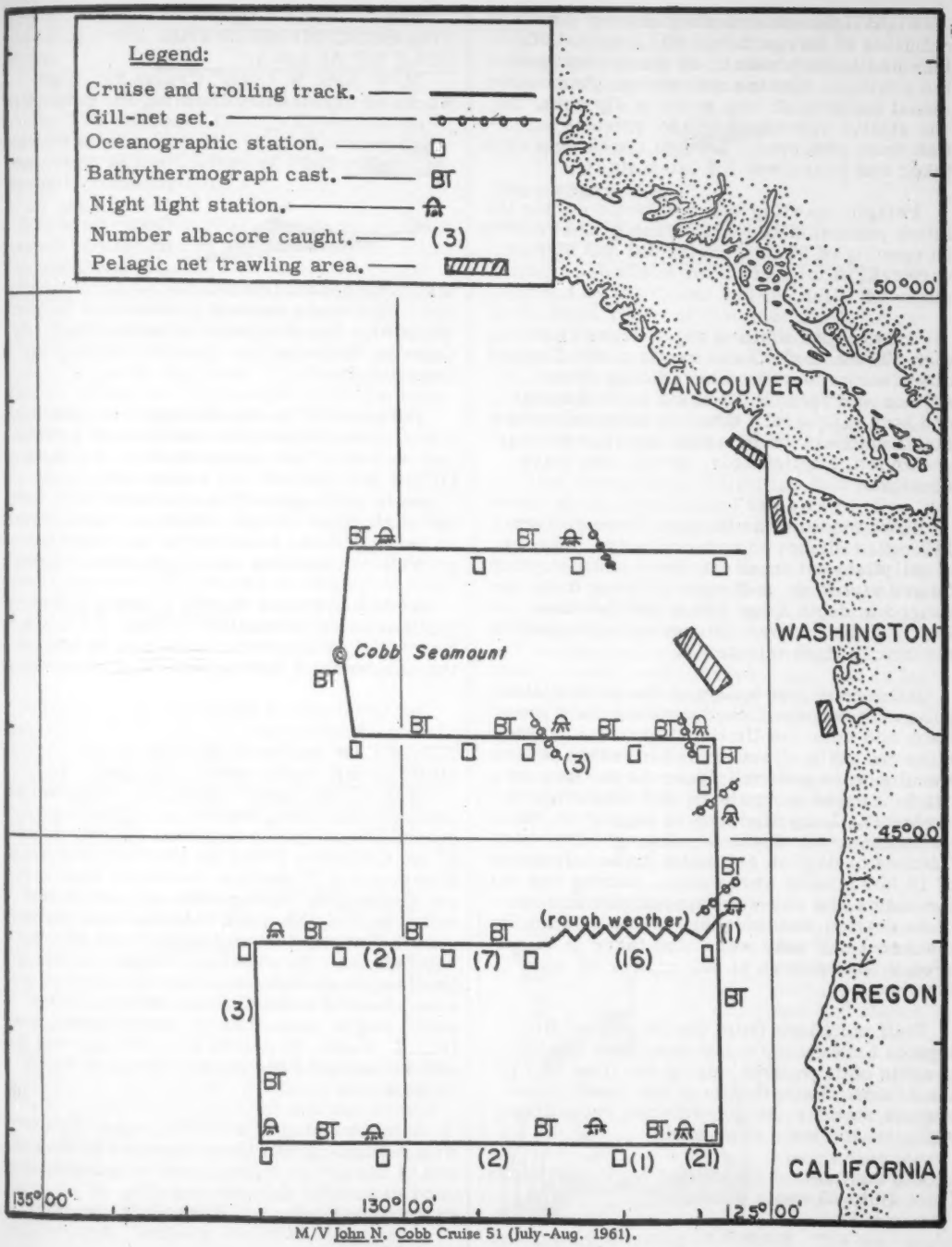
M/V "John N. Cobb" Cruise 51: Primary objectives of a 6-week cruise (ended August 18, 1961) by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel John N. Cobb were to obtain information on the abundance and distribution of albacore tuna and other pelagic species of fish by sampling with gill nets, trolling lines, pelagic trawls, and night lights. Other objectives included the collection of oceanographic data by participating staff members of the Bureau's San Diego Biological Laboratory.

Regions surveyed during the cruise extend from the California-Oregon border to Cape Beale, British Columbia, offshore to a maximum of 310 miles.

The first half of the cruise was devoted to use of gill nets, night lights, and trolling gear. During the last half of the cruise, pelagic trawling gear was used to sample shallow areas (less than 50 fathoms deep) near the mouth of the Columbia River, deep scattering layers off Washington and Oregon, and the coastal waters near Swiftshure Bank and the Umatilla light ship.

A total of 5 gill-net sets was made using 4 shackles of surface nets and 4 shackles of nets submerged to a corkline depth of 100 feet. The total catch of tuna consisted of 2 albacore and 1 bluefin. Blue sharks were taken in every set and caused considerable fouling and damage to the gear. All 8 shackles of gear were lost on the fifth set, presumed to be caused by excessive loading with shark.

Trolling was conducted during daylight hours with generally poor results. Fifty-two albacore ranging in size from 29.4 - 31.9 inches were taken on troll lines. Best catches were made on the more southerly track lines.



M/V John N. Cobb Cruise 51 (July-Aug. 1961).

Night light stations showed very small numbers of forage fishes and marine invertebrates to be present. Of those observed the principal species was saury. An occasional lanternfish was taken in dip nets. At one station approximately 50 juvenile sablefish were observed. Several specimens were taken and preserved for later study.

Pelagic trawling was conducted during the latter portion of the cruise using a net having an opening of 80 feet horizontal and 90 feet vertical. A total of 25 tows failed to produce albacore.

Trawling in shallow water areas (less than 50 fathoms) off the mouth of the Columbia River produced an occasional silver salmon and up to 160 pounds each of hake and jack mackerel. Other species taken in small numbers include blue shark, herring, anchovies, English sole, turbot, and black rockfish.

Tows made in the deep scattering layer 110 miles offshore produced large amounts of jellyfish and small numbers of lanternfish, fanged viperfish, and squid. These tows ranged in depth from 150 to 200 fathoms. Depth of the net was determined by use of the electrical depth telemeter.

During the last 5 days of the cruise, the pelagic trawl was fished near the Swiftsure Bank and near the Umtilla light ship to determine the net's effectiveness in taking salmon. Results were generally poor as the largest catch of salmon consisted of 5 adults and 8 juveniles. Large catches of dogfish in the Swiftsure area repeatedly damaged the gear. Catches of dogfish estimated to be in excess of 10,000 pounds were taken. During one set the entire cod end was lost and the intermediate section was severely chaffed. Jack mackerel and hake were also taken in this area in amounts up to 200 pounds of each species.

Staff members from the San Diego Biological Laboratory made numerous oceanographic observations during the first half of the cruise. Bathythermograph casts, water sample stations, solar radiation recordings, and plankton tows were made.

During most of the cruise northwest winds from 10 to 45 knots prevailed.

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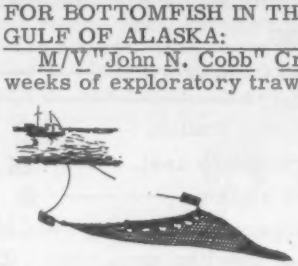
EXPLORATORY TRAWLING FOR BOTTOMFISH IN THE GULF OF ALASKA:

M/V "John N. Cobb" Cruise 52: Eight weeks of exploratory trawling for bottomfish in the Gulf of Alaska is the objective of the exploratory fishing vessel John N. Cobb of the U. S. Bureau of Commercial Fisheries. The vessel left Seattle September 5, 1961, and was expected to return on October 27, 1961. Trawling was to be done between Cape St. Elias and the general vicinity of Portlock Bank.



Purposes of the cruise were to determine the relative abundance and sizes of bottomfish and shellfish encountered in the area. Otolith (ear bones) and scales were to be taken from commercial species of fish for determination of ages. Halibut catches were to be tagged and returned to the water to provide information on migration and growth.

Sonic equipment was to be used to survey the bottom to determine suitable trawlable bottom. Catches were examined to assess the commercial fishing potential of the region.

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SURVEY OF MARINE ANIMALS AT DEPTHS OF 50 TO 450 FATHOMS:

M/V "Commando" Cruise 1: A survey of animals inhabiting the ocean bottom was conducted in the region southwest of the mouth of the Columbia River by the U. S. Bureau of Commercial Fisheries chartered fishing vessel Commando during a 20-day cruise that ended on July 12, 1961. Marine animals were sampled at depths ranging between 50 and 450 fathoms. In addition, a high-resolution, low frequency echo-sounder was used to locate areas of smooth ocean bottom in the above region and offshore from Destruction Island, Wash., to depths of 1,000 fathoms that will be sampled for marine fauna on future cruises.

A commercial-size 400-mesh otter trawl with a small-mesh liner inserted in the cod end of the net to retain small organisms was used to sample animals residing on or close to the ocean bottom. A small dredge was

used to collect burrowing and other animals inhabiting a thin surface layer of the ocean bottom.

Samples of fish and shellfish were collected for the Atomic Energy Commission and delivered to the Radiation Biological Laboratory at the College of Fisheries, University of Washington.

Food fish taken during the cruise included sablefish (Anaplopoma fimbria), Dover sole (Microstomus pacificus), rex sole (Glyptocephalus zachirus), petrale sole (Eopsetta jordani), and several species of rockfish (Sebastodes). Sablefish and Dover sole were taken throughout the entire depth range sampled. The catch-per-hour of sablefish ranged from 25 pounds to 700 pounds, with the best catches occurring at depths of 275 to 375 fathoms. This is considerably deeper than commercial trawl fishermen now operate in the region surveyed. The highest catch of Dover sole per hour of fishing, 800 pounds, was taken at a depth of 250 fathoms. Although some Dover sole were taken at all depths surveyed, catches of this species declined rapidly beyond 275 fathoms in depth. Ocean perch (Sebastodes alutus) were captured at depths from 75 to 250 fathoms, including a catch of 750 pounds of this species taken in a one-hour trawl drag at 225 fathoms.

Unusual species of fish encountered in deep water included the black-tailed liparid (Careproctus melanurus), arrowfish (Tactostoma macropus), fanged viperfish (Chauliodus macouni), deep-water sole (Embassichthys bathybius), long-finned cod (Antimora rostrata), and several unidentified herring-like fish.

Although not commercially utilized at present, substantial numbers of tanner crabs (Chionoecetes tanneri) were captured at depths between 250 and 400 fathoms. Male tanner crabs occupied the shallower portion of this range while females were found in the deeper waters.

Starfish of various species were common at all depths surveyed. Concentrations of brittle starfish (Ophiuroids) and sea cucumbers (Holothuroids) were found at a range of 150 to 200 fathoms and 225 to 300 fathoms, respectively.

Three specimens of an unusual species of octopus, the "flapjack devilfish" (Opisthoteuthis sp.), were captured at depths from 300 to 450 fathoms. They measured 12 to 15 inches across the body which extended to the outer margin of the tentacles.

Oceanography

UNUSUAL SEA BOTTOM FEATURES OBJECT OF NEW OCEAN STUDY:

Under the first research grant ($2,000) awarded by the Coast and Geodetic Survey, U. S. Department of Commerce, in its expanding research program, oceanographers began probing the sea near Bethany Beach, Del., on August 7, to learn more about the origin and behavior of the mysterious sand waves that intersect the U. S. coastline in many areas from Cape Hatteras to New York.

Restricting their activities to a patch of ocean about three times the size of New York's Central Park, the oceanographers equipped with cameras and instruments are going to plunge into the sea to observe the effect of currents and other phenomena on the sandy bottom topography. This project, Survey officials say, is the first systematic and continuing research approach to the study of sand wave morphology, and is important to increasing man's understanding of the processes and mechanics of the sea.

The individual sand waves in the study area are very broad formations rising and falling from ridge to trough in heights of 10 feet or more, over one-half mile intervals. Very little is known about these unusual ocean floor undulations.

Skin diving oceanographers will release colored dyes near the shallow ocean floor and make film records of subsurface currents and turbulence which, perhaps, contribute to the formation of the sand waves. Some oceanographers have advanced the theory that these waves may be old beach stands, drowned in geologic time by a rising sea level. The ten-square-

mile project area along the Delaware coast contains some of the best examples of sand wave formations known to marine researchers today.

Oysters

CHEMICAL METHODS FOR CONTROL OF SHELLFISH PREDATORS TESTED:

Steps are being taken to clear the chemical method for the control of shellfish predators for industrial use. Testing is being done by the Milford (Conn.) Biological Laboratory of the U.S. Bureau of Commercial Fisheries. In previous publications the Laboratory strongly emphasized that although the method is quite effective against boring snails, such as oyster drills, and several other molluscan enemies, its use is not recommended until the effects of the chemicals constituting the formula on water communities in general could be determined, and also ascertain whether some of the substances accumulate in the body tissues of mollusks, such as oysters and clams, rendering them undesirable or dangerous as food.

In accordance with this principle, representatives of the U.S. Bureau of Commercial Fisheries and other Federal institutions, including the U.S. Public Health Service and U.S. Food and Drug Administration, held several meetings to decide the steps that should be taken to determine the safety of the method. Since then, to test the method, a number of experimental oyster plots in Long Island Sound have been treated with different formulae and different quantities of the chemicals. At present, samples of oysters and clams are collected at definite intervals from these plots and adjacent areas to be tested for traces of the chemicals in their body tissues.

Because accurate testing methods have already been developed and approved for Sevin, one of the components of the chemical formula, tests for residues of this chemical in molluscan meats are already in progress. However, since no methods were available for determining small quantities of chlorinated benzenes, such as orthodichlorobenzene, in tissues of clams and oysters, a contract to develop such a method has been signed with a testing company of Hoboken, N. J. Only after a method has been developed and accepted by proper authorities, which may take several months, can analysis of the sample begin. The Laboratory at Milford is now collecting samples, however, that will be ready for analysis as soon as a method is developed.

Oystermen are asked not to employ the chemical method until it is approved since improper use of it may lead to many undesirable misunderstandings and mistakes. Meanwhile, various aspects of the method will be developed in an effort to make it more versatile, effective, cheaper and, most of all, safer for aquatic communities.

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LONG ISLAND SOUND OBSERVATIONS ON SPAWNING AND SETTING AS OF AUGUST 17:

Examination of numerous plankton samples, collected since July 26, showed either a complete absence or a scarcity of oyster larvae and of bivalve larvae in general, the U. S. Bureau of Commercial Fisheries Biological Laboratory, Milford, Conn., reports. Samples collected on July 27, each representing the plankton contents of 500 gallons of sea water, contained only two oyster larvae at Station 10, 4 oyster larvae at Station 5, and 1 oyster larva at Station 2. From then until August 10 no oyster larvae and very few bivalve larvae of any kind were found in the samples. From August 10 to 17, the water of Long Island Sound became less populated with microorganisms of the type that change the color of the water to brownish-red and, parallel with this clearing, the number of bivalve larvae increased although oyster larvae were still virtually absent.

Scarcity of bivalve larvae, in general, and oyster larvae, in particular, is due to toxic substances released into the sea water by microscopic "red water" organisms. These toxins are known to interfere with development of molluscan eggs and growth of their larvae. As of August 17 oyster setting has been virtually a failure in all the areas of Long Island Sound where observations on setting are conducted.

During the last part of July starfish setting continued to be heaviest in the Bridgeport area, especially at Stations 9 and 10. The peak of the wave was reached during the first few days of August. Setting virtually ceased on August 7, but was resumed the following day and finally formed a second peak on August 12 and 13. This peak, however, was peculiar in the respect that, while some stations in each of the three major areas received some set, other stations, exemplified by Stations 4 and 5 in New Haven and Station 10 in Bridgeport, were virtually free of newly set starfish. (Bulletin No. 4, August 17, 1961, issued by the Milford Biological Laboratory.)

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MARYLAND OBSERVATIONS, 1961 SEASON:

Setting Observations: The progress of oyster setting in Maryland as shown by exposure of test shells for weekly periods in certain areas is reported seasonally by the State of Maryland "Special Oyster Bulletin" of the Chesapeake Biological Laboratory, Natural Resources Institute, Solomons, Md.

Placement of test shell bags was begun this year on June 12. Some areas included in former years have been discontinued while stations in the Little Choptank have been added. Setting as of late July 1961 has been rather light and scattered except in St. Marys River and on Punch Island Creek bar where, while not exceptionally heavy, the best spatfalls for several years have been observed. The late spring peak of barnacle setting had ended at most stations before test bags were started. In St. Marys River a fairly numerous set of barnacles occurred during the second week of July.

General Conditions: Both water temperature and salinity were lower than normal during most of the spring and early summer of 1961. Rainfall was above normal and the increased flow of soluble nutrients from the land probably has been an important factor in the generally excellent spring growth and spring fattening of oysters. An exception to this has been in limited upstream areas where salinities became too low for the oysters to feed and grow normally this spring.

Oyster Mortalities: Maryland oysters in general have continued to show an impressive freedom from the parasites and predators that cause serious damage in most other areas. However, the severe losses recently experienced in the neighboring States of New Jersey, Delaware, and Virginia are a matter of major concern.

Research in Progress: The extent to which MSX may contribute to future mortalities in Maryland is not yet known. Oysters in the Maryland Chesapeake area do not yet, as a group, show resistance, but have been found to be highly susceptible when experimentally transplanted to infested waters in Delaware Bay. Resistance to the parasite is being shown by lower death rate among surviving oysters in the heavy mortality areas of Delaware Bay and Virginia. When resistant survivors become apparent in Maryland, they should be utilized as brood stock in order to hasten the buildup of a resistant population. This measure has been recommended in both Delaware Bay and Virginia.

There are indications, though still incomplete, that MSX infection is lighter and less destructive in the low salinity portion of affected areas. Experiments to determine the effect of low salinity on development of MSX are under way at the Chesapeake Biological Laboratory where oysters from an area of infection in Virginia are being held in aquaria under

high, intermediate, and low salinity conditions. Infections among all groups thus far have been too low to produce conclusive results so that a new series with more heavily infected oysters must be observed. It remains extremely important that no infected oysters be transplanted to uninfested low salinity areas unless it can be demonstrated that MSX will not continue to develop and spread to other oysters in these waters.

Major emphasis is being given to continued oyster mortality studies by all agencies working on the problem. This laboratory plans to test resistance to MSX of oysters from different sources when exposed on trays to the infective conditions now present in Pocomoke Sound. Also the laboratory will continue to monitor Maryland oyster mortality at selected tray stations, study the effects of salinity upon MSX development, check for the presence of MSX and other known parasites on oyster beds throughout the State, conduct basic studies of the MSX organism, search for new oyster parasites, and follow up reports of any serious oyster losses that may occur. These mortality studies will continue to be coordinated with and supplement the research of the other scientific agencies.

Outlook: Present indications are that, except for a scarcity of oysters on the bottom, the outlook for oysters in most of Maryland continues good with prospects of better than usual growth. Though the future oyster mortality problem is uncertain, losses to date should not seriously affect next season's harvest. An upturn in MSX mortality in out-of-state areas has occurred each year during late summer and fall and mortality from this cause in Maryland must be watched for, especially in those areas where the parasite is now known to be present. It should be emphasized that MSX is perfectly harmless to man and its presence in oysters does not affect the utilization of such oysters as food.

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MARYLAND OBSERVATIONS AS OF AUGUST 24:

Setting Observations: Since issuance of the first bulletin for this season, oyster setting improved in Holland Straits, Hooper Straits, and the Tar Bay-Barren Island area but still was quite light, according to the August 24, 1961, "Special Oyster Bulletin" of the Chesapeake Biological Laboratory, Natural Resources Institute, Solomons, Md. An upturn in Honga River shows a good set for the upper river. Setting tapered off on Punch Island Creek bar and in the upper St. Marys where good sets occurred on test shells. A first but light set occurred at the Laboratory pier in the lower Patuxent and at Hog Island on the western side of the Bay near the mouth of the Patuxent. Few additional spat were found in the Little Choptank where the total set on the test shells remained light.

It must be emphasized that the surviving set at the end of the season on planted shells usually will be much less than the amount of 1- to 7-day old spat counted on clean test shells. Sometimes nearly all of the set is lost due to fouled shells and the presence of oyster enemies. The degree of survival cannot be accurately predicted and varies greatly from place to place. In general, a higher proportion of spat will survive from a light set than from a heavy one, partly because of uncrowded space for growth. Counts of the surviving or commercial set on bottom cultch are made in late fall and in the spring. Test shells are useful for determining the time of set and the potentials for good or poor commercial sets. Last year the State shell planting in Pry Cove, made just at the start of a light set, received a commercial set on the upper layer of shells that was approximately 75 percent of the quantity found on test shells, an exceptionally good record that illustrated the value of timing shell planting to coincide with the beginning of an oyster set.

Other Conditions: Water temperatures for the past month were near normal to a few degrees above. Salinity at Solomons rose to about 12 but was still below normal. Oysters opened for parasite examination generally were in good condition for the season of the year.

Serious losses of oysters in lower Virginia and in portions of the Maryland Seaside area occurred during the past few weeks and were continuing. In the Maryland portion of the Chesapeake area losses still were low. The parasite MSX was not observed in other areas than those reported in the previous bulletin.

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USE OF CHEMICALS TO PREVENT FOULING OF SHELLS USED AS CULTCH:

Rapid fouling of oyster shells used as cultch to collect sets of oysters is one of the major difficulties experienced by oyster growers of Long Island Sound and other areas where cultivation of oysters is conducted. Often, soon after planting, shells become so encrusted with fouling organisms that they are no longer of any value as cultch.

Realizing the seriousness of the fouling problem to the oyster industry, the Milford (Conn.) Biological Laboratory of the U. S. Bureau of Commercial Fisheries, parallel with studies on chemical control of oyster predators, has been conducting extensive experiments to find a method by means of which fouling can be either prevented to a large degree or entirely stopped. The fouling organisms, which the Laboratory wishes to prevent from setting, included barnacles, sea grapes or tunicates, tube-forming worms, such as Polydora, Bryozoa, Folliculina, small mussels, and algae. The Laboratory is also interested in preventing setting of larvae of such predators as the flatworm Stylochus, starfish and, in some areas, the free-swimming larvae of drills.

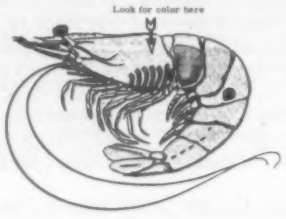
Shrimp

LARGE-SCALE MARKING EXPERIMENT IN DRY TORTUGAS AREA:

As a part of its program of research on Gulf of Mexico shrimp stocks, the Galveston Biological Laboratory of the U. S. Bureau of Commercial Fisheries initiated a large-scale shrimp-marking experiment in the area just north of Dry Tortugas in mid-September 1961. Objectives will be to secure a reliable index of the rate of fishing on the Tortugas pink shrimp stock, together with a better measure of growth during the pink shrimp's transition from noncommercial to commercial size.

STAINED SHRIMP $2.00 REWARD

Shrimp have been marked with blue and green biological stains to obtain information on movements, growth, and rate of harvest. The color appears only on both sides of the head (in the gills) as shown in the illustration.



A reward of $2.00 will be paid for stained shrimp when returned with the following information:

1. Exact place the shrimp was caught.
2. Date the shrimp was caught.

Notify by mail the U.S. Fish and Wildlife Service, No. 1 Rickenbacker Causeway, Miami, Florida, or contact any Fish and Wildlife Service agent at port of landing. Please include name of vessel with the information submitted.

The capture, marking, and release of the experimental shrimp was done by the exploratory fishing vessel George M. Bowers. Plans called for release at random points on the Tortugas grounds not less than 11,000 shrimp, 10,000 to be marked by injection with green stain, 1,000 with blue. Since stains, when injected into shrimp, ultimately concentrate in restricted areas of the head (viewed from the side), commercial shrimp catches must be examined rather closely to detect stained individuals that might have been recaptured. Marked shrimp may be expected to occur in commercial catches with diminishing frequency for at least six months following commencement of the experiment.

The nature of this experiment demands, and its success in the light of applying the same technique to shrimp stocks elsewhere in the Gulf requires, that the highest possible number of marked specimens detected be returned for analysis.

South Atlantic Exploratory Fishery Program

AVAILABILITY OF COMMERCIAL STOCKS OF CALICO SCALLOPS OFF CAPE CANAVERAL (FLA.) SURVEYED:

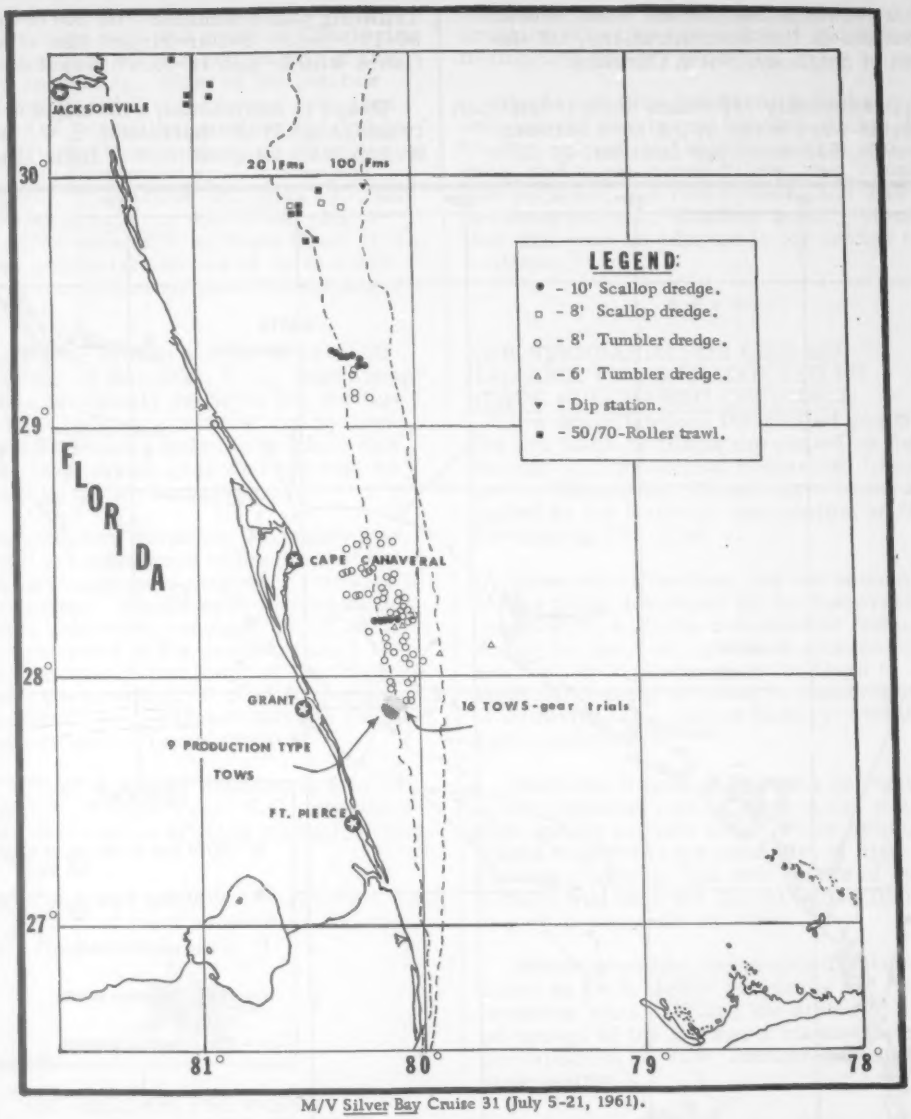
M/V "Silver Bay" Cruise 31: Providing technical assistance to the fishing industry in developing the calico scallop fishery off Cape Canaveral, Fla., was the primary objective of a 17-day cruise (ended July 21, 1961) by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Silver Bay. Principal efforts were concentrated on determining the availability of commercial quantities of scallops in that area.

Best results were achieved SSE. of Cape Canaveral in 20 fathoms (approximate position 27°54' N., 80°06' W.). In that area, catches of large scallops (shell diameter 2 to $2\frac{5}{8}$ inches) ranged up to 11 bushels per 15-minute drag. Meat yields ranged from $5\frac{1}{2}$-6 pints per 75-pound bushel and from 70-85 scallop meats per pound.

Fishing between Cape Canaveral and Grant, Fla., resulted in catches of small to medium scallops in amounts ranging up to 15 bushels per 15-minute drag. Owing to the small size and yield of the meats, only marginal commercial value can be attached to the catches at present. East of Cape Canaveral in 13-22 fathoms catches consisted of up to 8 bushels of scallops that did not approach commercial size and were mostly between $\frac{5}{8}$ and 1 inch in shell diameter.

The effectiveness of the types of scallop gear used was tested in a series of comparative trials. An 8-foot tumbler dredge with 2-inch rings was found most effective under test conditions. Scallop samples were obtained for use by Bureau biologists and technologists. Four lots of shell stock were landed at Cape Canaveral for industry use in testing newly-developed processing machinery.

A secondary objective was to conduct limited snapper trawling trials between St. Augustine and the St. Johns River, Fla. Efforts were confined to 11 drags in 12 to 32 fathoms. Catches of mixed fish ranged up to 1,570 pounds. Vermillion snapper (Rhombop-



M/V Silver Bay Cruise 31 (July 5-21, 1961).

lites aurorubens), tomtate (Haemulon aurolineatum) and grey triggerfish (Balistes capriscus) dominated most catches. Red snapper (Lutianus blackfordi) and grey snapper (L. griseus) were taken in smaller amounts.

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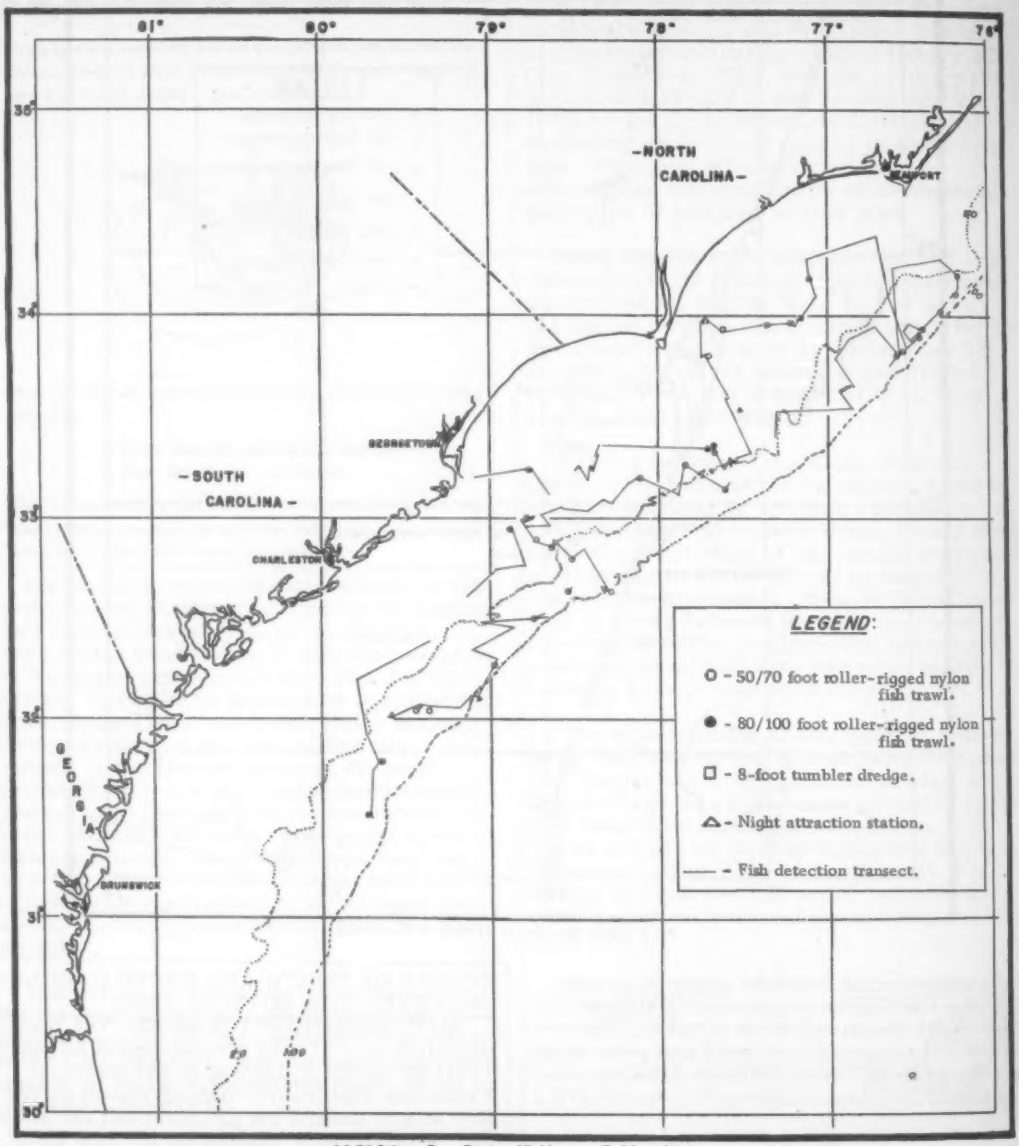
COASTS OF NORTH AND SOUTH CAROLINA SURVEYED FOR BOTTOM FISH:

M/V "Silver Bay" Cruise 32: The major objective of a 17-day cruise (ended August 23, 1961) by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Silver Bay was to determine the potential for snapper, grouper, and associated species using

bottom trawls in conjunction with recorder indications of fish concentrations, off the coasts of South and North Carolina.

Approximately 795 miles of fish-detection transects were made in the area between Savannah, Ga., and Cape Lookout, N. C. Trawling was conducted with 50/70' and 80/100' nylon, roller-rigged fish trawls fished with 8- and 10-foot bracket doors.

Drags in conjunction with slight recorder tracings south of Charleston, S. C., produced no commercial quantities of fish. Drags



M/V Silver Bay Cruise 32 (August 7-23, 1961).

made in conjunction with fair to good recorder tracings east and north of Charleston produced catches up to 2,100 pounds of fish per 60-minute drag. Most of the catches were of commercial significance and were comprised of vermillion snapper (Rhomboplites aurorubens), scup or porgy (Stenotomus sp.), tomtate (Haemulon sp.), amberjack (Seriola sp.), triggerfish (Balistes sp.), and grouper (Mycteroperca sp.) in varying amounts. One area SSW. of Cape Fear, N. C., produced individual catches of up to 1,000 pounds of vermillion snappers averaging 2 pounds each.

Trawling on broken bottom in 30 to 60 fathoms SSE. of Beaufort, S. C., where snappers were previously reported (by the Bureau's M/V Delaware in 1958 and by local hand-line fishermen) failed to produce this species. Only minor gear damage was encountered in the areas surveyed.

Fish detection transects in Onslow Bay, N. C., did not show good indications of bottom fish although good midwater tracings were recorded. Drags made in conjunction with these midwater tracings, which occasionally extended to the bottom, failed to produce catches of commercial significance. However, the presence of scad (Decapterus sp.) and small scup suggest that the shoals were comprised of these species.

Six scallop dredging stations in 8 to 18 fathoms NE. of Cape Fear, N.C., produced a single live scallop (Pecten gibbus), 20 mm. in width.

A port call was made in Georgetown, S.C., at the request of local authorities and interested fishermen.

Standards

MEETINGS HELD ON PROPOSED QUALITY STANDARDS FOR FROZEN FLOUNDER AND SOLE FILLETS:

The U. S. Bureau of Commercial Fisheries held public meetings at Seattle, Wash. (August 28), at San Francisco (August 30), and at Boston, Mass. (September 1), to consider new quality standards for frozen flounder and sole fillets.

Developed by Bureau laboratories in Seattle, Wash., and Gloucester, Mass., these standards mark another important step in a constant effort by Government and industry to improve fishery products.

Similar quality standards have been developed and are in use for fish sticks; fish blocks; salmon and halibut steaks; cod, haddock, and ocean perch fillets; raw breaded fish portions; and raw breaded and raw headless shrimp. Another quality standard that will soon be adopted is for frozen fried scallops.

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NEW STANDARDS FOR COD AND HADDOCK FILLETS ADOPTED BY STATE PURCHASING OFFICIALS:

New specifications for chilled and frozen cod and haddock fillets developed by the U.S. Bureau of Commercial Fisheries' Laboratory at Gloucester, Mass., have been adopted by the National Association of State Purchasing Officials.

These specifications are the second of a series being developed by the Laboratory in cooperation with the commercial fishing industry for the Association. Bureau scientists are developing these specifications to enable state purchasing officials to obtain wider use of uniform, high-quality fishery products in state institutions.

State nutritional authorities recognize fishery products as an economical source of high quality protein food. While helping the states to provide a varied diet of high-quality fishery products, this new series of specifications will help the United States fishing industry to increase its sales.

Where possible, these specifications are based on U. S. Grade Standards for fishery products, thus enabling the states to take advantage of the Bureau's inspection and certification service, another guarantee of high quality.

State Purchasing Specifications

SPECIFICATIONS FOR SEVERAL FISHERY PRODUCTS FRAMED FOR STATE PURCHASING OFFICIALS:

Specifications for frozen ocean perch fillets, chilled and frozen cod or haddock

fillets, and scallops were framed by the Gloucester Technological Laboratory of the U. S. Bureau of Commercial Fisheries during the fiscal year ending June 30, 1961, for the National Association of State Purchasing Officals (NASPO). Late in July the Director of Purchases for the State of Connecticut and his assistants visited the Gloucester Laboratory to discuss fishery specifications work for the Association.

A schedule for new NASPO specifications to be developed during this fiscal year was agreed upon. These include (1) portions, all forms; (2) shrimp, all forms; and (3) canned tuna.

It was also agreed to publish the specifications in some periodical, such as Commercial Fisheries Review, in order to obtain a permanent record of these specifications and to make them known to all segments of the fishing industry. NASPO also plans to publish the specifications for use by the States.

The Connecticut Director of Purchases volunteered the institutions in Connecticut for field-testing new whiting products to be developed as part of a Bureau project to improve the quality of whiting.

United States Fishery Landings, January-July 1961

Total Landings: Landings of fish and shellfish in the United States during the first 7 months of 1961 amounted to about 351 million pounds or 16 percent more than during the comparable period of 1960.

Salmon: On the basis of the reported pack of canned salmon, it was estimated that the Alaska catch to August 20, 1961, of about 232 million pounds was up almost 40 million pounds over a year ago.

Shrimp: The South Atlantic and Gulf States landings through July 1961 (nearly 70 million pounds) were down 28 million pounds--a drop of 29 percent from the same period in 1960.

United States Commercial Fishery Landings of Certain Species for Periods Shown, 1961 and 1960

Species	Period	1961 1/	1960	Total 1960
		(1,000 lbs.)		
Anchovies, Calif.	7 mos.	2,600	1,962	5,057
Cod:				
Maine	6 mos.	1,500	2,045	2,897
Boston 2/	7 "	13,200	10,073	15,548
Gloucester 2/	7 "	1,600	2,056	3,199
Total cod		16,300	14,174	21,644
Haddock:				
Maine	6 mos.	1,300	1,803	3,834
Boston 2/	7 "	52,300	46,031	76,695
Gloucester 2/	7 "	9,000	9,068	12,107
Total haddock		62,600	56,902	92,636
Halibut: 3/				
Alaska	7 mos.	18,800	18,682	21,351
Wash. & Oreg.	7 "	10,800	14,102	16,802
Total halibut		29,600	32,784	38,153
Herring:				
Maine	6 mos.	3,400	16,462	152,327
Alaska	7 "	33,400	42,380	77,913
Industrial Fish, Maine & Mass. 4/	7 mos.	22,600	21,058	43,733
Mackerel:				
Jack	7 mos.	29,800	38,672	74,945
Pacific	7 "	20,600	9,966	36,808
Menhaden	7 mos.	1,294,400	999,019	1,999,000
Ocean Perch:				
Maine	6 mos.	39,900	36,867	78,258
Boston	7 "	300	556	1,481
Gloucester	7 "	34,400	39,211	61,673
Total ocean perch		74,600	76,634	141,412
Salmon:				
Alaska	to Aug. 20	232,200	192,423	207,101
Washington	5 mos.	2/1,000	2/832	16,178
Oregon	3 "	2/100	2/68	5,582
Scallops, Sea, New Bedford (meats)	7 mos.	11,900	11,047	19,358
Shrimp (heads-on):				
South Atl. & Gulf	7 mos.	69,900	98,304	236,398
Washington	5 "	300	559	1,801
Oregon	3 "	70	14	861
Squid, Calif.	7 mos.	1,100	444	2,562
Tuna, Calif.	to Aug. 19	211,600	198,836	283,060
Whiting:				
Maine	6 mos.	2,300	3,131	11,123
Boston	7 "	60	86	754
Gloucester	7 "	24,200	26,281	63,112
Total whiting		26,560	29,498	74,989
Total all above items		2,144,630	1,842,038	3,582,073
Others not listed		399,370	351,131	1,397,927
Grand Total		2,544,000	2,193,169	4,980,000

1/Preliminary.
2/Landed weight.
3/Dressed weight.
4/Excludes menhaden.
Note: Data represent weight of fish and shellfish as landed except for mollusks which are weight of meats only.

Menhaden: Landings during the first 7 months of 1961 amounted to about 1,294 million pounds--an increase of 295 million pounds over the previous year.

Tuna: Landings in California (including transshipments of United States-caught fish from South America) totaled almost

212 million pounds to August 19, 1961--up nearly 13 million pounds from the same period in 1960.

Haddock: The 7-months 1961 landings of nearly 63 million pounds were about 6 million pounds greater than during the same period in 1960.

Halibut: The Alaska, Washington, and Oregon catch January through July of about 29 million pounds was 3 million pounds less than in the same period in 1960.

Scallops: New Bedford landings of meats during the first 7 months of 1961 of almost 12 million pounds exceeded the 1960 catch for the period by 900,000 pounds.

Mackerel: Landings of Pacific mackerel (over 20 million pounds) through July 1961 more than doubled those in the previous year, while jack mackerel landings (nearly 30 million pounds) declined 9 million pounds in comparison with 1960.

Whiting: During the first 7 months of 1961, landings at Gloucester (24 million pounds) were down 2 million pounds or 8 percent as compared with the previous year.

U.S. Fish Meal and Solubles Supply, June 1961

The total United States supply of fish meal for the first 6 months of 1961 amounted to 207,000 tons--57,000 tons greater than during the same period of 1960. The domestic production accounted for 48 percent and imports 52 percent of the total supply for the first half of 1961.

Fish meal produced by United States firms during January-June 1961 totaled close to 100,000 tons. Fish meal processed from menhaden accounted for 82 percent of that total. Fish meal imports from foreign countries during January-June 1961 amounted to 107,000 tons--up 41,000 tons from the same period of 1960. Imports from Peru made up 69 percent and those from Canada, South Africa, and Chile accounted for 29 percent of the imports in the first six months of 1961.

U. S. Supply of Fish Meal and Solubles, January-June 1961 with Comparative Data

Item	January-June 1961	January-June 1960	Total 1960
	(Short Tons)		
Fish Meal and Scrap:			
Domestic production:			
Menhaden	82,277	56,013	218,423
Tuna and mackerel	9,705	15,520	26,325
Herring, Alaska	1,216	1,526	6,071
Other	6,621	11,096	38,897
Total production	1/99,819	1/84,155	289,716
Imports:			
Canada	19,367	21,930	30,982
Peru	73,648	32,889	68,156
Chile	5,892	7,393	21,183
Angola	1,433	-	888
Republic of South Africa	6,396	3,905	7,073
Other countries	727	258	3,279
Total imports	107,463	66,375	131,561
Available fish meal supply	207,282	150,530	421,277
Fish Solubles:			
Domestic production 2/	38,428	36,946	98,929
Imports:			
Canada	660	615	869
Denmark	28	1,858	1,858
Other countries	531	45	447
Total imports	1,219	2,518	3,174
Available fish solubles supply	39,647	39,464	102,103

1/Preliminary. Based on reports from firms which accounted for 96 percent of the 1960 total production.
2/50-percent solids. Includes production of homogenized condensed fish.

The United States supply of fish solubles (including homogenized condensed fish) during January-June 1961 was about the same as in the first six months of 1960. Domestic production in January-June 1961 amounted to 38,000 tons and imports totaled about 1,200 tons.

United States Fishing Vessels

DOCUMENTATIONS ISSUED AND CANCELLED, JUNE 1961:

During June 1961, 63 vessels of 5 net tons and over were issued first documents as fishing craft, 7 vessels less than in the same month last year. But the number issued first documents the first 6 months this year was 16 more than in the same period last year.

Table 1 - U. S. Fishing Vessels[1]--Documentations Issued and Cancelled, by Areas, June 1961

Area (Home Port)	June		Jan.-June		Total
	1961	1960	1961	1960	1960
	(Number)				
Issued first documents 2/:					
New England	2	6	17	13	35
Middle Atlantic	2	1	4	11	16
Chesapeake	10	15	35	38	78
South Atlantic	6	7	21	29	48
Gulf	9	17	61	46	89
Pacific	31	21	101	89	147
Great Lakes	3	3	8	7	18
Puerto Rico	-	-	2	-	-
Total	63	70	249	233	431
Removed from documentation 3/:					
New England	2	7	8	15	22
Middle Atlantic	-	2	15	6	18
Chesapeake	-	-	17	9	21
South Atlantic	3	3	14	21	38
Gulf	12	7	56	53	88
Pacific	9	6	52	38	86
Great Lakes	-	1	8	6	13
Puerto Rico	-	-	-	1	1
Total	26	26	170	149	287

See footnotes in table 2.

Table 2 - U. S. Fishing Vessels[1]--Documents Issued and Cancelled, by Tonnage Groups, June 1961

Gross Tonnage	Issued 2/	Cancelled 3/
	(Number)	
5-9	18	5
10-19	24	6
20-29	4	3
30-39	2	4
40-49	5	1
50-59	2	2
60-69	2	2
70-79	2	1
90-99	1	-
130-139	-	1
180-189	-	1
260-269	1	-
270-279	1	-
580-589	1	-
Total	63	26

1/Includes both commercial and sport fishing craft. A vessel is defined as a craft of 5 net-tons and over.
2/Includes redocumented vessels previously removed from records. Vessels issued first documents as fishing craft were built: 38 in 1961, 2 in 1960, 1 in 1958, 2 in 1957, 1 in 1955, and 19 prior to 1951. Assigned to areas on the basis of their home ports.
3/Includes vessels reported lost, abandoned, forfeited, sold alien, etc.
Source: Monthly Supplement to Merchant Vessels of the United States, Bureau of Customs, U.S. Treasury Department.

U. S. Foreign Trade

UNITED STATES EXPORTS AND RE-EXPORTS OF FROZEN SHRIMP TO JAPAN, JANUARY-MAY 1961:

Of the almost 2.8 million pounds of domestic and foreign fresh and frozen shrimp exported and re-exported from the United States during the first five months of this year, 53.1 percent or almost 1.5 million pounds were shipped to Japan. A substantial proportion of the shipments to Japan was made from California. Most of the re-exports consist of shrimp imported into the United States from Mexico.

United States Exports and Re-Exports of Fresh and Frozen Shrimp 1/to Japan, Jan.-May 1961

Type of Product	Jan.	Feb.	Mar.	Apr.	May	Total
	(1,000 Lbs.)					
Domestic	31	80	23	64	137	335
Foreign	286	198	185	148	326	1,143
Total	317	278	208	212	463	1,478

1/Although data appear under the "fresh and frozen shrimp" category, it is believed that all of the exports were frozen shrimp.

Exports and re-exports of shrimp to Japan from California were negligible prior to 1961. But due to a short supply of shrimp in Japan during the first part of this year and a strong market, that country has purchased substantial quantities of shrimp from the United States. Most of the Japanese purchases consist of frozen raw headless brown

shrimp, 21-25 shrimp to the pound. But some shipments included 26-30 count, 16-20 count, and under 15 count. The data for the first five months do not fully reveal the extent of the shrimp exports to Japan since sizable quantities were purchased in May and stockpiled for shipment in June-July. Later information as it becomes available will reveal the full extent of frozen shrimp exports to Japan.

* * * * *

EDIBLE FISHERY PRODUCTS, JUNE 1961:

Imports of edible fresh, frozen, and processed fish and shellfish into the United States during June 1961 increased by 4.1 percent in quantity and 6.5 percent in value as compared with May 1961. The increase was due primarily to higher imports of groundfish and other fillets (up 3.6 million pounds) and frozen other tuna (up 2.9 million pounds), and to a lesser degree, an increase in the imports of canned tuna in brine and lobsters and spiny lobsters. The increase was partly offset by a 1.4-million-pound decrease in the imports of frozen albacore tuna.

Compared with June 1960, the imports in June this year were up by 0.6 percent in quantity and 1.8 percent in value due to higher imports of frozen groundfish fillets (up 5.6 million pounds). Compensating, in part, for the increase was a drop of about 1.6 million pounds in the imports of frozen albacore and other tuna, frozen shrimp, lobsters and spiny lobster tails, and canned salmon.

U. S. Imports and Exports of Edible Fishery Products, June 1961 with Comparisons

Item	QUANTITY			VALUE		
	June		Year	June		Year
	1961	1960	1960	1961	1960	1960
	(Millions of Lbs.)			(Millions of $)		
Imports:						
Fish & shellfish:						
Fresh, frozen, & processed 1/. . . .	86.8	86.3	1,011.2	27.7	27.2	304.8
Exports:						
Fish & shellfish:						
Processed only 1/ (excluding fresh & frozen)	1.2	1.5	48.7	0.8	0.8	19.2

1/Includes pastes, sauces, clam chowder and juice, and other specialties.

United States exports of processed fish and shellfish in June 1961 were lower by 14.4 percent in quantity and 33.3 percent in value as compared with May 1961. Compared with the same month in 1960, the exports this June were down by 18.3 percent in quantity but unchanged in value. The lower exports in June this year as compared with the same month in 1960 were due primarily to sharply lower exports of California sardines and squid. In June 1961 the value of the exports was relatively high because of increases in the exports of high-priced fresh, frozen, and canned shrimp.

* * * * *

IMPORTS OF CANNED TUNA IN BRINE UNDER QUOTA:

The quantity of tuna canned in brine which may be imported into the United States during the calendar year 1961 at the 12½-percent rate of duty is 57,114,714 pounds. Any imports in excess of the quota are dutiable at 25 percent ad valorem.

Imports from January 1-July 29, 1961, amounted to 27,898,898 pounds, according to data compiled by the Bureau of Customs.

Imports in 1960 for the period January 1-July 30 amounted to 26,754,852 pounds.

U.S. Shrimp Supply Indicators as of Sept. 6, 1961

Item and Period	1961	1960	1959	1958	1957
	(1,000 Lbs.)				
Total Landings, Atlantic and Gulf States (heads-off):					
September	1/	18,832	18,330	15,847	13,673
August	10,100	20,441	18,595	14,173	15,011
July	10,521	21,746	17,490	13,457	15,389
January-August	52,400	78,961	71,599	63,729	72,289
January-December	1/	141,035	130,659	116,552	116,238
Quantity used for Canning, Gulf States (heads-off): 2/					
September	1/	2,236	2,108	2,825	1,506
August	1,155	5,041	2,427	2,809	2,464
July	3,058	6,319	3,085	4,805	3,475
January-August	9,696	21,210	16,450	14,723	13,429
January-December	1/	28,594	24,679	26,404	18,386
Frozen Inventories of raw headless (as of end of each month) 3/:					
August	1/	20,171	23,780	15,274	10,867
July	15,343	17,397	22,352	12,351	8,768
June	19,416	15,398	19,283	10,664	7,007
January-July, monthly average	27,678	22,486	24,200	13,580	10,194
January-December, monthly average	1/	25,954	27,296	18,008	13,627
Imports 4/:					
July	1/	7,319	7,861	6,340	5,384
June	8,065	8,932	8,300	6,018	5,240
May	8,278	9,902	8,264	5,666	3,870
January-June	57,168	51,365	49,826	32,278	28,972
January-December	1/	113,419	106,555	85,393	69,677

1/Not available.
2/Pounds of headless shrimp determined by multiplying the number of standard cases by 33.
3/Source: "Frozen Fish Reports." Includes raw headless only; excludes breaded, peeled and deveined, etc.
4/Includes fresh, frozen, canned, dried, and other shrimp products as reported by U. S. Bureau of the Census.
Note: Data for 1961 are preliminary. August 1961 data estimated from information published daily by the New Orleans Fishery Market News Service. To convert shrimp to heads-on weight multiply by 1.68.

Wholesale Prices, August 1961

In August this year, the wholesale price index for edible fishery products (fresh, frozen, and canned) at 137.1 percent of the 1947-49 average was up sharply (6.1 percent) from the preceding month and was also higher by 10.2 percent from the same month of 1960. Higher wholesale prices for fresh and frozen shrimp, fresh large haddock, and Maine canned sardines this August were largely responsible for the increase over July. As compared with August a year ago, most of the fishery products index items were higher priced this August.

The fresh and frozen drawn, dressed, and whole finfish subgroup index this August rose 10.9 percent from the preceding month due to higher ex-vessel prices for large haddock at Boston (up 65.4 percent), fresh dressed Pacific halibut (up 8.6 percent), Lake Superior drawn whitefish (up 20.8 percent), and fresh dressed king salmon (up 1.2 percent). Compared with the same month of 1960, the subgroup index this August rose about 2.7 percent. Sharply higher large haddock prices (up 44.2 percent) at Boston plus an increase of 7.0 percent for dressed halibut more than offset price declines of 24.5 percent for fresh Great Lakes yellow pike and 2.8 percent for fresh dressed king salmon at New York City.

The fresh processed fish and shellfish subgroup price index jumped 8.4 percent from July to August this year and was up 20.2 percent from August 1960. From mid-July to mid-August this year fresh shrimp prices at New York City increased 19.4 percent and fresh small haddock fillets at Boston rose 5.2 percent. When compared with August of 1960, prices this August were higher for fresh shrimp by 28.2 percent, fresh small haddock fillets by 15.1 percent, and fresh shucked oysters by 14.3 percent.

Wholesale prices this August for frozen processed fish and shellfish rose 7.5 percent from a month earlier due primarily to a sharp rise (about 11 cents a pound or 14.8 percent) in frozen shrimp prices at Chicago. From August a year ago to this August the subgroup price index increased 10.1 percent because of lower shrimp landings and stocks and shorter supplies of frozen haddock and ocean perch fillets. In August 1961, prices increased for frozen shrimp (up 28.3 percent), frozen haddock fillets (up 20.3 percent), and ocean perch fillets (up 5.6 percent) from the same month of 1960.

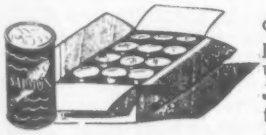
The canned fishery products subgroup index in August 1961 increased 1.5 percent from July due to 14.2-percent higher prices for canned Maine sardines. The pack of Maine sardines was below normal as of August 31. Other canned fish products in the subgroup remained unchanged from past months. As compared with August of 1960, the subgroup price index was higher by 8.9 percent due to higher prices for canned salmon and canned Maine and California sardines. Stocks of canned Pacific salmon as of the end of August 1961 were moderately good and up from the same period of 1960. Canned tuna stocks at the end of August 1961 were good but trending lower; supplies of both Maine and California sardines available for current use and for the near future were very poor.

Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, August 1961 With Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices 1/ ($)		Indexes (1947-49=100)			
			Aug. 1961	July 1961	Aug. 1961	July 1961	June 1961	Aug. 1960
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					137.1	129.2	129.5	124.4
Fresh & Frozen Fishery Products:					153.5	140.8	141.6	138.5
Drawn, Dressed, or Whole Finfish:					162.4	146.5	151.9	158.1
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.13	.08	128.2	77.5	86.9	88.9
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.38	.35	117.6	108.3	114.5	109.9
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.88	.87	196.6	194.3	196.6	202.2
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.64	.53	158.7	131.4	151.2	158.7
Yellow pike, L. Michigan & Huron, rnd., fresh	New York	lb.	.55	.58	129.0	136.0	132.5	170.0
Processed, Fresh (Fish & Shellfish):					158.2	146.0	145.4	131.6
Fillets, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.31	.29	103.8	98.7	98.7	90.2
Shrimp, lge. (26-30 count), headless, fresh.	New York	lb.	.87	.73	136.7	114.5	122.4	106.6
Oysters, shucked, standards	Norfolk	gal.	8.00	8.00	198.0	198.0	185.6	173.2
Processed, Frozen (Fish & Shellfish):					124.0	115.3	113.2	112.6
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.39	.39	100.8	100.8	102.1	102.1
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.33	.33	102.0	103.6	102.0	84.8
Ocean perch, skins on, 1-lb. pkg.	Boston	lb.	.29	.28	114.8	112.8	114.8	108.7
Shrimp, lge. (26-30 count), 5-lb. pkg.	Chicago	lb.	.82	.71	125.8	109.6	106.5	111.5
Canned Fishery Products:					114.1	112.4	112.0	104.8
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs.	Seattle	cs.	28.00	28.00	146.1	146.1	146.1	127.8
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	11.00	11.00	79.3	79.3	79.3	80.0
Sardines, Calif., tom. pack, No. 1 oval (15 oz.), 48 cans/cs.	Los Angeles	cs.	4.50	4.50	105.0	105.0	105.0	93.9
Sardines, Maine, keyless oil, 1/4 drawn (3-3/4 oz.), 100 cans/cs.	New York	cs.	10.31	9.03	109.7	96.1	93.1	93.1

1/ Represent average prices for one day (Monday or Tuesday) during the week in which the 15th of the month occurs. These prices are published as indicators of movement and not necessarily absolute level. Daily Market News Service "Fishery Products Reports" should be referred to for actual prices.

Cans--Shipments for Fishery Products, January-June 1961



Total shipments of metal cans for packing fishery products during January-June 1961 amounted to 63,146 short tons of steel (based on the amount of steel consumed in the manufacture of cans) as compared with 60,560 tons in the same period of 1960. Canning of fishery products in January-June this year was confined largely to tuna, shrimp, jack mackerel, Pacific salmon, and Maine sardines. The greater use of cans this year was largely due to a greater pack of salmon in Alaska.

Note: Statistics cover all commercial and captive plants known to be producing metal cans. Reported in base boxes of steel consumed in the manufacture of cans, the data for fishery products are converted to tons of steel by using the factor: 23.0 base boxes of steel equal one short ton of steel.

FOREIGN

International

FISHING LIMITS

NO SPECIAL FISHING RIGHTS FOR POLISH TRAWLERS IN NORWEGIAN TERRITORIAL WATERS:

Representatives of the Norwegian and Polish Governments in June 1961 concluded negotiations regarding possible fishing rights for Polish fishing vessels within the Norwegian 12-mile fishing limits boundary. The leader of the Norwegian delegation has reportedly stated to the press that there was found to be no historical basis on which to grant any special rights to Polish vessels. Thus, when the Norwegian fishing limits boundary is extended from 6 to 12 miles as of September 1, 1961, Polish fishing vessels will be obliged to remain outside the new boundary. (United States Embassy, Oslo, dispatch, dated July 7, 1961.)

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SCANDINAVIAN COUNTRIES DISCUSS EXTENSION:

The Danish Fisheries Minister early in July 1961 was in Norway discussing with his Swedish and Norwegian colleagues the extension of fishing limits for Greenland and the Faroe Islands as well as for the three Scandinavian countries proper. Danish fishery circles predict the eventual adoption by all three countries of a 12-mile limit, with "traditional" fishing fleets (i.e. those from the other two countries) permitted to continue to fish in the outer six of the 12 miles for about ten years. (United States Embassy, Copenhagen dispatch, dated July 11, 1961.)

FOOD AND AGRICULTURE ORGANIZATION

CHAIRMAN NAMED FOR INTERNATIONAL CONFERENCE ON FISH IN NUTRITION:

For the FAO International Conference on Fish in Nutrition, September 19-27, 1961, in Washington, D. C., Donald L. McKernan, Director of the Bureau of Commercial Fisheries, U. S. Fish and Wildlife Service was named as chairman.

Donald L. McKernan

According to the tentative agenda drawn up for the meeting, the conference was to be opened by Dr. D. B. Finn, Director of the FAO Fisheries Division. Welcoming remarks also were to be made by representatives of the U. S. Fish and Wildlife Service.

The purpose of the meeting was to compile and make available internationally the current knowledge on the nutritive value of fish and fishery products and on the biological factors affecting their nutritional value. Five main topic areas were set up, and the chairmen of the respective sessions were: "The Role of Fish in World Nutrition," H. E. Crowther, Assistant Director, U. S. Bureau of Commercial Fisheries; "Chemical Composition of Fish and Fishery Products," Dr. G. A. Reay, Director, Torry Research Station, Aberdeen, Scotland; "Contribution of Fish and Fish Products to National Diets," Prof. B. C. Guha, Head, Department of Applied Chemistry, University College of Science and Technology, Calcutta, India; "Fish and Fishery Products in Animal Nutrition," Prof. H. R. Bird, Chairman, Department of Poultry Husbandry, University of Wisconsin; and "Demand for Fish as Human Food and Possibilities for Increased Consumption," Prof. Georg Borgstrom, Michigan State University.

Participants from interested countries of FAO's 88-nation membership were expected to attend, along with scientists invited from governmental and nongovernmental organizations, and members of the fishing industry.

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International (Contd.):

FISHERIES RESEARCH VESSELS OF THE FUTURE FACE COMPLEX PROBLEMS:

The modern fisheries research vessel more and more has become a floating laboratory, designed to do on-the-spot tests and, in some cases, pass on the information to a waiting fishing fleet. But even in a land-locked laboratory, where does one put water samples of a half ton each?

Such huge water samples are needed to test for radioactivity, for the days are gone when a scientist simply lowered a string of small bottles over the ship's side and brought up water from different depths to determine the kind of plankton or the water's chemical content. Now, in this atomic age, scientists must test the oceans for radioactive waste, and since this waste diffuses, the water samples have grown from a quart to a half ton. But still the problem remains--how to process it?

Testing for radioactive waste, the possibility of using ocean-going catamarans or twin-hull craft for marine research, the Japanese development of a ship that causes no waves--these and many more advanced ideas were to be explored at a Food and Agriculture Organization (FAO) sponsored forum on research vessels, September 18-30, 1961, in Tokyo, Japan.

The meeting's purpose was to compile and exchange new information on the design and operation of research vessels and to bring together oceanographers, biologists, and naval architects to discuss mutual problems and accomplishments.

The men involved in developing these new ideas were to be present at the forum, men like Prof. Takao Inui of the University of Tokyo whose particular project has been creating a ship that causes no waves.

"We have known that a bulbous bow will reduce wave resistance," said the chief of FAO's Fishing Boat Section, and secretary of the forum. "But Prof. Inui has been studying the exact relation of waves to the bow and has developed and proved one type of bulbous bow to completely eliminate the bow wave."

It has already proved practical for a passenger vessel. An aerial photo of two identical ships moving along at full speed shows one ship had only a thin spume of white tailing from its stern and no bow wave due to its Inui bulb bow. An now Inui is trying to adapt his discovery to other vessels.

The advantages of a waveless ship? Using 1,000 hp. where you would use 1,500 hp.--much less pitch and much more space.

The problems of taking radioactive samples at sea is a fascinating subject, and they will be presented by oceanographers from the Scripps Institute of Oceanography, La Jolla, Calif., who have been involved in trying to develop a vessel for this purpose.

The possibility of using catamarans, the twin-hull ships, as research vessels was to be reported by representatives of the University of Miami, Fla. That University has been considering using an ocean-going catamaran for fisheries research and already has a small one in operation. Purported to be cheaper to operate due to less wave resistance, the catamaran has the practical advantage of providing more working space on the large platform that joins its twin hulls together.

However, one of the greatest factors to be considered in designing a new research vessel is not only cost of construction, but the cost of operation and maintenance. The new ship must be tailored to its job. Such a tailoring job will be reported on at the forum by Dr. H. F. P. Herdman of the National Institute of Oceanography, Wormsley, England, who is supervising the building of a new ship to replace the Discovery II, the latest in a series of pioneer British fishery research ships.

The vessel, now under construction in Aberdeen, Scotland, will incorporate all the new features learned from patient experiments with its parent craft. This will include such items as a bow propeller to increase maneuverability when retrieving modern oceanographic or biological apparatus moored in the open sea.

Lately, research vessels have a new function: doing research and providing general knowledge on ship behaviour that the naval architect can utilize in ship design. Papers were to be given at the meeting on how research vessels may give naval architects insight into ship behaviour--insight that can be directly used when designing passenger ships and super tankers.

The forum was to spend its first two days discussing work that is done on board a re-

International (Contd.):

search vessel. The participants were then to board the 1,215-ton research vessel, the Koyo Maru of the Shimonoseki College of Fisheries, for a two-day practical demonstration and then resume the meeting ashore.

GREAT LAKES FISHERY COMMISSION

ANNUAL MEETING CONSIDERS SEA LAMPREY CONTROL AND UNIFORM FISHING REGULATIONS:

The Great Lakes Fishery Commission (GLFC), which leads the fight against the fish-destroying sea lamprey, opened its two-day annual meeting at the University of Michigan June 22, 1961, with reports that revealed:

1. Chemical treatment of spawning streams to kill young sea lamprey before they emerge to feast on lake trout had been expanded to include 23 Lake Michigan tributaries through mid-June.

2. Catches of sea lamprey at electrical barriers in previously-treated Lake Superior streams--the best means of checking effectiveness of lamprey control methods--have been higher this year than expected.

Sea lamprey electrical barrier on a Michigan upper peninsula stream.

The U. S. Bureau of Commercial Fisheries reported that 51,628 sea lamprey had been caught in Lake Superior streams this year through June 16, a figure considerably higher than those of the previous four years.

The Bureau also reported, however, that the lampricide now in use continues to prove effective in killing lamprey young in the treated streams. It shares the chemical treatment work with the Fisheries Research Board of Canada.

The Chairman of the Commission said the reports make it clear that "destruction of a portion of the ammocoete (lamprey larvae) population is not sufficient to appreciably reduce the number of adults" which emerge to feed on valuable Great Lakes fish. He said the Commission would "continue to rely on our 1962 catches to establish the effectiveness of the initial series of treatments."

The Commission recommended extension of chemical treatment operations on Lake Huron and Lake Michigan streams, and a second round of treatment for Lake Superior streams to destroy young lamprey established since initial treatments began in 1958-59.

The Commission also proposed expanded research and a cooperative study toward more uniform fishing regulations on the big inland waters.

A letter has been sent to regulatory agencies in Ontario, Canada, and the states of the United States bordering the Great Lakes--Minnesota, Wisconsin, Michigan, Illinois, Indiana, Ohio, Pennsylvania, and New York. The letter proposes that conservation departments in each of the areas study fishery regulations in the light of new scientific information and suggests a series of meetings with Great Lakes researchers.

The Commission's Executive Secretary reported at the meeting that "existence of differences in fishery regulations of the Province and the Great Lakes States is a source of concern to those agencies for they apply, to some extent at least, to populations of common concern and appear to reflect disagreement on management practices." Complete uniformity may not be possible or desirable, he added, in cases where separate fish populations differ in attributes or in their value as primarily a recreational resource. Fluctuations in fish environment, mortality and growth rates must be considered.

The Executive Secretary proposed that "each regulatory agency be asked to (1) examine each regulation in the light of present information of all kinds and estimate its influence on yield; (2) recommend changes and estimate their effect; and (3) suggest studies which would follow the effects of the recommended change."

The letter prepared by the Commission reads in part:

International (Contd.):

"The Great Lakes Fishery Commission has been asked by its advisers to consider means of achieving a greater degree of uniformity in regulations on the Great Lakes Fishery. Although there is no virtue in uniformity per se, the Commission agrees that many of the present regulations may be inefficient and some possibly harmful to the productivity of the fishery.

"The Commission believes that information available on some segments of the fishery is now sufficient to justify a critical examination of existing regulations to estimate, or perhaps even measure, their effect on the fishery. It believes that the agencies concerned with regulating the fishery should examine each regulation, define its original intent and, on the basis of present information, estimate its impact on biological production, economic yield, and other conditions.

"The information available within each agency is not likely to prove adequate for the exhaustive study of the regulations proposed... . It is, therefore, proposed that the Commission arrange for the presentation of working papers by scientists investigating the life history and dynamics of some important populations in the Great Lakes and by scientists from outside the Great Lakes who may be able to contribute in some special way.

"These working papers would be discussed by senior representatives of the agencies concerned with evaluation of regulations at a series of meetings. The first meeting would deal with species or populations which are the most fully understood."

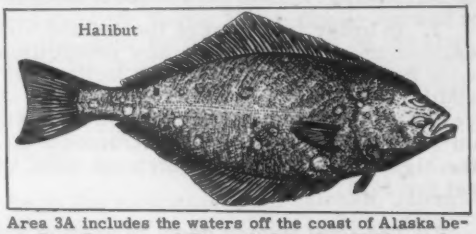
Commissioner Donald McKernan, Director of the U. S. Bureau of Commercial Fisheries, received approval of his proposal that a detailed prospectus be prepared for each of the Great Lakes. He called for a broad program in which specific major projects are described "in adequate detail as to need and method of attack." The analysis of each lake, he added, should "not be confined to biological-oceanographic matters, but be broadened to include the various technological and economic problems that are so important to the sound and economic exploitation of the fisheries." Cost estimates and priorities for the various projects would be included.

Note: Commission established by a Convention between Canada and the United States for the conservation of Great Lakes Fishery Resources.

INTERNATIONAL PACIFIC HALIBUT COMMISSION

NORTH PACIFIC HALIBUT FISHING IN AREA 3A ENDED:

The end of fishing in Pacific halibut Area 3A took place at 6 a.m. (P.S.T.) on August 23, 1961. The International Pacific Halibut Commission made the announcement on August 4, 1961, since it estimated that by August 23 the catch limit of 33 million pounds for Area 3A would have been reached. As of August 1, 1961, the landings of halibut from Area 3A were 27.0 million pounds. The Area 3A closure this year is 29 days later than in 1960 when fishing ended on July 25. In 1959 fishing in Area 3A stopped on August 1; in 1958 on August 31; and in 1957 on September 22.



Area 3A includes the waters off the coast of Alaska between Cape Spencer and Shumagin Islands. Fishing in Area 3A after August 23 is ended until reopened in 1962.

There has been no announcement as to closure of Area 2 and fishing in that area will continue until the 28.0-million-pound limit has been caught. Halibut landings from Area 2 as of August 10, 1961, totaled 23.7 million pounds. In 1960 Area 2 closed on July 31, but in 1959 Area 2 closed on July 8. This is the second year for many, many years that Area 3A closed before Area 2. Area 1B fishing season is identical to that for Area 2. Fishing in Areas 1A and 3B continued until 6 a.m. (P.S.T.) October 1, 1961.

The official opening date for all halibut fishing in the North Pacific regulatory areas this year was May 10 at 6:00 a.m. (P.S.T.), except that fishing in Area 3B South started on April 25 and Area 3B North started on April 10.

This year Area 3A was open to fishing for 105 days--20 days more than the 85 days in 1960. In 1959 the area was open to fishing for 92 days, in 1958 for 119 days, in 1957 for 144 days (the longest season for the area since 1945 when the area was open to fishing for 147 days). Between 1945 and 1955 the trend had been towards a shorter season, but then the trend reversed itself and through 1957 the seasons were longer. However, beginning in 1958 the trend was reversed again and the seasons through 1960 became shorter. But again in 1961 the trend reversed itself and the season has become longer.

Under authority of the Convention between Canada and the United States of America for the Preservation of the Halibut Fishery of the Northern Pacific Ocean and Bering Sea, this year's regulations became effective March 30, 1961.

JAPAN-SOVIET NORTHWEST PACIFIC FISHERIES COMMISSION

PROCEEDINGS OF FIFTH ANNUAL MEETING:

The joint communique issued by Japan and the U.S.S.R. on the fifth annual meeting of the Northwest Pacific Fisheries Commission follows:

Joint Communique of the Northwest Pacific Japan-Soviet Fishery Commission, May 21, 1961: The Northwest Pacific Japan-Soviet Fishery Commission held its 5th Conference

International (Contd.):

in Tokyo from February 6 through May 21, 1961. At the Conference, the Science and Technical Committee met from February 6 through February 22 and the plenary session met from February 20 through May 21 to discuss the issues related to fishing on the high seas of the northwest Pacific. After discussions, the Commission adopted the following principal decisions.

1. In order to preserve the salmon and salmon-trout resources, a new prohibition zone south of 48 degrees north latitude, in addition to the same prohibition zone as last year against the fishing of salmon and salmon-trout by mobile fishing instruments on the high seas within the restricted zone, was set for 1961.

2. The total fishing quota of salmon and salmon-trout within the restricted zone for 1961 was set at 65,000 metric tons.

3. In 1961 and 1962, as regards all the lines of drift nets floated over the whole area of salmon and salmon-trout fishing operations by fishing boats which belong to mother boats within the restricted zone, the part accounting for not less than 50 percent of the length of each line shall consist of nets which have a knot-to-knot mesh length of not less than 65 millimeters.

4. In order to preserve the crab resources, it was decided to conduct no commercial crab fishing in 1961 in a few areas adjacent to the west coast of the Kamchatka Peninsula.

The Committee agreed on a scientific cooperative survey program concerning salmon, salmon-trout, crab, and herring, recognized the need to carry out an exchange of men of learning and experience concerning fisheries in 1961, and recommended the two countries to carry out that exchange.

The Commission elected Iwao Fujita as Chairman and P. A. Moiseev as Vice-Chairman of its 5th Conference.

The Commission decided to convene its 6th Conference in Moscow from February 26, 1962.

The Commission decided to convene the Science and Technicial Subcommittee in Moscow from February 5, 1962, having this committee discuss "the condition of the salmon and salmon-trout resources in the Treaty area in 1962," and have it submit a report on the matter to the next regular Conference of the Commission.

The minutes of the 5th meeting of the Commission were signed at the Japanese Foreign Office on May 21... .

The press release issued by the Japanese Foreign Ministry on May 21 follows:

Fifth Session of the Japan-Soviet Fishery Commission: The fifth annual meeting of the Japan-Soviet Fishery Commission for the current year opened in Tokyo on February 6, about two weeks behind schedule, being led off by the meeting of the Science and Technology Subcommittee. With the attendance of three Japanese committee members and three Soviet committee members, together with a number of experts in various fields, the meeting was held almost daily and was concluded on May 20. In the meantime, the plenary session of the Commission was held 29 times, while the Science and Technology Subcommittee met 13 times, and the informal talks between committee members of both nations amounted to about 50 times.

The talks extended over more than 100 days. The items agreed to and the progress of the talks are outlined in the following:

1. Boundaries of the Restricted Area for Salmon and Salmon-Trout Fisheries:

The Soviet Union, holding that a large amount of salmon and salmon-trout is being captured in areas south of the current restricted area, strongly insisted that such southern areas should be incorporated into the restricted area so as to apply the same restrictive measures. To this, Japan held the view that the enlargement and change of the restricted area is a serious problem touching the fundamentals of the Fishery Treaty, and that since the southern areas are fishing grounds for small-scale Japanese fishermen, the extension of the restricted area will threaten their livelihood, Japan took an uncompromising stand against the enlargement of the restricted area. Japan at the same time insisted that in the southern areas, enforcement of Japan's self-imposed restrictive measures as occasion demands will be sufficient and as in the past, harsher voluntary restrictive measures are to be adopted in the current season in the areas in question. The Soviet Union insisted on the enlargement of the restricted area and did not yield an inch, therefore, no agreement was reached on this issue despite repeated

International (Contd.):

talks. Meanwhile, with the arrival of the fishing season in those areas, Japan gave permission, out of sheer necessity, for the fishing vessels to sail out for operations outside the current restricted area. The Soviet Union, while strongly criticizing Japan for this action, issued the statement that it would not consider that the problem of the boundaries of the restricted area had been settled. After all, the fishery talks were adjourned without reaching any agreement on this issue.

2. Yearly Quota for Salmon and Salmon-Trout Catches in the Restricted Area, Fishing Season, and the Restricted Area:

In this year's conference, too, there was a considerable gap between the views of Japan and the Soviet Union as to the appraisal of the conditions of salmon and salmon-trout resources, but as a result of discussions at the Science and Technology Subcommittee, Japan and the Soviet Union reached agreement in that this year's condition of salmon and salmon-trout resources, though it cannot be compared with the condition in the past several abundant, odd-numbered years, is much better than the past meager, even-numbered years. Nonetheless, the Soviet Union, while insisting that salmon and salmon-trout resources, particularly the latter, have remarkably decreased along the coasts of the Soviet Union because of offshore fisheries, and at the same time that contrary to an increase in Japan's catches, proposed the establishment of a vast forbidden area, partly out of the intention of countering Japan's permission for sailing out for fishing in the non-restricted areas, and at the same time proposed the moving up of the end of the fishing season from August 10--the date provided for in the Japan-Soviet Fishery Treaty and observed since then--to July 25.

Furthermore, in the deliberation of the yearly quota for salmon and salmon-trout, whereas Japan proposed a quota of 80,000 tons from the standpoint that a quota should be decided, in accordance with the agreement reached at the Science and Technology Subcommittee, somewhere between 85,000 tons, which was the quota for the rich year 1959, and 67,500 tons, which was the quota for the lean last year, the Soviet Union proposed a quota of only 50,000 tons.

As to the problems of the yearly quota for salmon and salmon-trout catches and of the forbidden area, Japan and the Soviet Union conducted talks several times and as a result of the submission of several substitute plans, the gap of views between the two countries was narrowed gradually, but as to the area south of latitude 48° N. and west of longitude 160° E. (the main fishing ground for Japan's port-based catcher boats) which is located within the restricted area, the Soviet Union stubbornly insisted that the area should be incorporated into the prohibited fishing area. As a result of Japan's persistent requests for a concession, the Soviet Union finally agreed to settle the issue by lifting the ban on the area south of latitude 45°51' N. and east of longitude 151°30' E. On the other hand, as to the sea area north of latitude 48° N., the same forbidden area as that for last year was established.

As to the total amount of catches, Japan insisted on a quota based on the conclusion reached at the Science and Technology Subcommittee, and it was difficult to reach a compromise, but finally both sides agreed to set up a quota of 65,000 tons for Japan.

Prior to this, the Soviet Union strongly pointed out a large number of violation cases on the part of Japanese fishing boats, and as a result, the Committee recommended to both Japan and the Soviet Union that stricter control measures be adopted.

3. Problems Concerning the Operations of Salmon and Salmon-Trout Fisheries:

Concerning the control over fishery operations, various problems were discussed, including the following:

(a) As to the restriction on the capture of red salmon, it was agreed that fishery and scientific tests will be carried out with the objective of setting the limit of catches at 7,750,000 fish (about 15,500 tons).

(b) As to the problem of enlarging the mesh of the drift nets used in the mothership fisheries, it was agreed that throughout the entire areas where motherships are operated the drift nets having mesh measuring 65 millimeters from knot to knot will be used up to more than 50 percent of the total drift nets. In addition, on this same problem, the Commission recognized the desirability that the scientific research boats of both nations will be boarded by a certain number of experts of the other party.

International (Contd.):

4. Restrictions on Crab Fisheries:

As to the restrictions on crab fisheries carried out on the western coasts of Kamchatka, it was agreed that there will be no change from last year as to the forbidden area, the amounts of canned crabs of both sides (260,000 cases for Japan and 390,000 cases for the Soviet Union, according to the Japanese way of computation) and the restrictions on the use of nets, and that as to the area where the operations of Japan and the Soviet Union are adjusted for a certain period, the order of the two countries will be reversed.

5. Restrictions on Herring Fisheries:

As to Hokkaido and Sakhalin herring, it was decided for the current year, too, that the same scientific research as last year will be conducted and other adequate measures will be taken in the main spawning grounds.

6. Joint Investigation and Exchange of Men of Learning and Experience:

At this year's conference, it was agreed that both Japan and the Soviet Union will map out and adopt an advanced joint investigation plan and that an exchange of men of learning and experience will be carried out. (Supplied by United States Embassy, Tokyo, report dated July 5, 1961.)

NORDIC FISHERY COORDINATION COMMITTEE PROPOSED

The establishment of a Nordic coordination committee for fisheries and fishing limits was discussed informally by the fishery ministers of Denmark, Sweden, and Norway during a tour of the fisheries of northern Norway in July 1961, according to press reports. These same subjects were discussed at their meeting in Oslo.

The fishery ministers were expected to propose such a coordination committee at the meeting of the Nordic Council in October 1961. The coordination committee would consist of representatives from the fishery industries and the fishery ministerial staffs as well as the ministers themselves. (From a July 28, 1961, report from the Fisheries Attache, United States Embassy, Copenhagen.)

NORTH PACIFIC FISHERIES COMMISSION

WORKING PARTY ON OCEANOGRAPHY MEETS:

The Working Part on Oceanography of the Committee on Biology and Research of the International North Pacific Fisheries Commission met July 15-August 15, 1961, in Nanaimo, British Columbia, Canada.

The Committee was authorized to make a joint report on oceanography of the area of interest to the Commission and correspondents were named by Canada, Japan, and the United States to prepare such a joint report. The report has been carried on by mail since it was not possible for the Working Party members to meet in 1960. The purpose of this meeting was to coordinate their contributions and prepare the final report.

The United States was represented by a biologist from the U. S. Bureau of Commercial Fisheries, Seattle, Wash.

WHALING

AGREEMENT REACHED ON DIVISION OF WHALE QUOTA FOR 1962/63 SEASON:

The Netherlands Ministry of Agriculture on July 31, 1961 announced that an agreement was reached by Japan, Norway, United Kingdom, and the Netherlands on the division of the quota of blue-whale units among those countries effective the 1962/63 season. Further consultations would take place in the near future with the Soviet Union on the text of the agreement regulating division of the catch among the five countries. As soon as agreement is reached with the Soviet Union, the Netherlands will rejoin the International Whaling Convention and sign the agreement on the division of the catch.

The Soviet Union had previously agreed to an allocation of 20 percent and that the remaining 80 percent was to be divided as follows: Japan 33 percent; Norway 32 percent; United Kingdom 9 percent; and the Netherlands 6 percent as the "basic share." In addition, the Netherlands is to receive each year from the Japanese-Norwegian-British share a bonus of 45, 60, or 70 units, provided the Dutch whaling industry has caught 75, 80, or 85 percent, respectively, of its quota by the time the official catching season is four-fifths expired. The four countries have also agreed that the above arrangement will be

International (Contd.):

valid seven years in accordance with the recommendations of the London whaling conference of November 1958. (As reported on August 1, 1961, by the United States Embassy, the Hague.)

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NORWAY TO SELL WHALE FACTORYSHIP TO JAPAN:

It has been reported in the Norwegian press that a Japanese whaling company has agreed to purchase from a Norwegian shipping and whaling company, the whale factoryship Kosmos III, together with five whale catching boats, for the sum of 55.5 million kroner (about US$7.8 million). With the transfer, the Japanese company would reportedly take over the whale quota assigned to the Kosmos III expedition. The sale is contingent upon approval being granted by the Norwegian Government. (United States Embassy, Oslo, dispatch dated July 7, 1961.)

Angola

FISHERY TRENDS, FIRST QUARTER 1961:

The recession continued to have a severe effect on Angolan business in the fishing centers such as Benguela, Mocamedes, Porto Alexandre, and Baia Forte. Subsidies to the fishing industry were terminated at the end of 1960 in view of the rise in the world price of machine-dried fish meal, but producers in some areas were left without enough funds to ready their equipment for the coming season or to hire the necessary employees.

According to editorial opinion, that which is needed in the fishing industry is a reorganization and modernization of the industry so as to permit the more efficient production of a wider variety of fish products. Also, the length of the recession has left some sections of the industry without enough funds to take advantage of the resources they have. A Provincia reported that the fishing industry at Benguela petitioned the Governor General in March 1961 for the loan of approximately 6,000 contos (US$210,000) to ready the fishing fleet there for the three-month fishing season beginning in May. But no loan was granted. Reports from other areas, however, indicate that conditions have begun to improve. The Mocamedes Fishing Guild, for example, reported considerable exports of fish meal and higher fish meal quotations at the close of the first quarter.

Angola's exports of fish meal in the first quarter 1960 of 3,254 metric tons (valued at US$361,900) rose to 16,023 tons (valued at $1,197,805) in the first quarter of 1961, and dried fish exports rose from 2,940 tons in 1960 to 3,824 tons in 1961. (From a July 13 report of the United States Consulate, Luanda.)

Belgium

FISH MEAL IMPORT DUTY REDUCED 50 PERCENT:

The special import duties which have been in effect since March 18, 1961, on Belgian imports of fish meal and feedstuffs containing fish meal have been reduced by 50 percent following a new decree issued by the Ministries of Agriculture and Economic Affairs on July 17, 1961.

The revised duties, effective July 28, 1961, are as follows:

(1) Fish meal and powder, Belgian franc 1.00 per kilo (US$18.14 a short ton); (2) Feedstuffs containing fish meal or powder, (a) of which the gross protein content amounts to 15 percent or less, Belgian franc 0.10 per kilo ($1.81 a short ton); (b) of which the gross protein content amounts to more than 15 percent but less than 25 percent, Belgian franc 0.75 per kilo ($13.61 a short ton); and (c) of which the gross protein content amounts to more than 25 percent, Belgian franc 1.00 per kilo ($18.14 a short ton).

Belgian imports of fish meal experienced a steep drop after the establishment of the special import duty of $40.00 per metric ton ($36.29 a short ton) in March 1961. Importers of fish meal and manufacturers of feedstuffs, who had piled up large stocks during the last few months of 1960 and the beginning of 1961, reduced their imports to an extremely low level. But now that the import duty on fish meal has been reduced from $40.00 per metric ton to $20.00 ($18.14 a short ton) it is expected that Belgian imports of fish meal will gradually resume their former importance. In addition to the import duties, there is also a "taxe de transmission" (sales tax) of 8 percent on fish meal, and 5 percent on feedstuffs containing fish meal. (Report dated July 27,

Belgium (Contd.):

1961, from United States Consulate in Antwerp.)

Canada

NEW BRUNSWICK
FISH MEAL PRICES, JULY 1961:

Fish-meal prices (60-percent protein) quoted by New Brunswick producers late in July 1961 averaged about C$120 a short ton ($2.00 a protein unit) for both exports and domestic sales. Due to short supply and good demand, fish-meal prices have advanced steadily since May and as of late July were up about $18 a ton from the $102 a ton ($1.70 a protein unit) quoted by producers in mid-May this year. (United States Consulate, Saint John, N. B., July 27, 1961.)

Denmark

FISHERMEN SEEK EX-VESSEL FLOOR PRICES FOR SEVERAL VARIETIES OF FISH:

Floor or a minimum on ex-vessel prices for several varieties of fish are being sought by Danish fishermen. Producers of food fish, disturbed by recent low prices for plaice, a Danish staple, are seeking an agreement on a voluntary floor or minimum price of one krone per kilo (6.6 U. S. cents a pound) for fish in the fourth size category. If this price could not be realized, the fishermen would sell their catch for mink food and bear any loss themselves. Fishermen supplying industrial fish to trout-pond operators also are seeking to institute a minimum price of 0.30 kroner per kilo (almost 2 cents a pound) for herring.

Meanwhile, the head of the Skagen Fisheries Association has claimed that all prices have increased except those paid to fishermen. He declared that fishermen must be guaranteed reasonable minimum prices for their catches, but did not believe that the Government could set up a pool as a guarantee for a minimum price regulation at once. However, he said that the Government, after having provided over 400 million kroner (US$58 million) for agricultural support, should be ready to cover a part of the expenses involved in establishing a pool to guarantee minimum prices for fish.

The recent low prices paid for live plaice in Danish ports spurred a newspaperman to check prices from the fishermen's level to the consumer. He found that port buyers paid the fishermen about 1.30 kroner per kilo (about 8.6 U. S. cents a pound); the fish buyers resold the fish to wholesalers in Danish cities, such as Copenhagen, for about 2.60 kroner per kilo (17 cents a pound); the wholesalers received about 3.10 kroner per kilo (20.4 cents a pound) from the retail fish dealers, who then sold the plaice to housewives for 5 kroner per kilo (33 cents a pound) or almost quadruple the price the fishermen received. (August 8, 1961, report from Fisheries Attache, United State Embassy, Copenhagen.)

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FISHERY TRENDS, SECOND QUARTER 1961:

The large export of cod fillets to the United States in 1961 and the benefits derived from the dollar premiums (about 4 percent) earned by those exports were mentioned in a quarterly radio review of the Danish fisheries made by a member of the Fisheries Council--an organization of the major fishery associations in Denmark. The premiums are scheduled to expire on December 31, 1961. Since the fillet producers have many difficulties now, he suggested the fishery organizations seek to have the dollar premiums extended. If the fishery export industry did not obtain support, it was possible it could not compete in the United States with other countries.

With reference to the Common Market, he believed there would be hardly any opposition in the Danish fishing industry if the United Kingdom also sought membership. Minimum price regulations for various varieties of fish could be established to insure fishermen a reasonable return if there was harmony and cooperation among the fishermen, but sacrifices would be required. One of the easiest ways for the Government to aid the fishing industry would be to provide funds for marketing organizations both in Denmark and in foreign countries--a proposal for which the fishery organizations should seek support from the Minister of Fisheries. (Fisheries Attache report of August 8, 1961, United States Embassy, Copenhagen.)

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Denmark (Contd.):

FISHERY TRENDS, JANUARY-JUNE 1961:
While Danish fishery landings during the first half of 1961 were down slightly from last year, the valuable flatfish catch was up almost 20 percent and the herring catch up about 10 percent. As a result, exports of fresh, iced, or frozen fish were up almost 40 percent in quantity and about 25 percent in value as compared with 1960. Fish meal exports, however, were only slightly in excess of the low 1960 level.

There were mounting complaints from fishermen over continued low prices for industrial fish and declining prices for edible fish. Partly because of price developments and partly as a result of subsidies granted farmers, some Danish fishermen began demanding minimum export price guarantees and/or subsidies. Much concern was also being expressed over the difficulty of recruiting sufficient labor to man the fishing fleet. Another problem of vital concern to Denmark's fisheries is accession to the European Economic Community (EEC). With West Germany the leading purchaser of fish from Denmark and with important markets in the other EEC countries, Danish fishery circles are almost unanimous in favoring accession.

Fishing limits continued to be an important topic of discussion, with both Danish-Norwegian-Swedish and Icelandic-Faroese talks taking place. The problem came into vivid focus when, on May 30, 1961, a Danish naval patrol vessel fired on a British trawler which it claimed had violated Faroese territorial waters. (From a July 26 report of the United States Embassy, Copenhagen.)

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FISHERY TRENDS, JULY 1961:
Salmon Fishing Began A Month Early: The first Danish cutter began fishing for salmon in the Baltic Sea this season in late July, about a month earlier than the usual starting time in late August. Favorable reports from Swedish cutters which fish the salmon grounds near the island of Gotland off the east coast of Sweden all summer were responsible for the earlier departure.

Shortage of Mates Delays Fishing Vessel Departures: Esbjerg and Skagen, the two largest fishing ports in Denmark, report a shortage of mates has delayed the departure of fishing craft. Unemployment in Denmark is at the lowest level since 1940.

Shrimp Grading Proposed: The shrimp committee of the various Jutland fishery associations has drafted for their consideration a proposal that all shrimp catches be sorted over a 7 millimeter (0.3 inch) screen. That portion which goes through the screen must be returned to the sea. The remainder may be sold unsorted, or sorted into two groups. One may not contain over 160 shrimp per kilo (2.2 pounds) and the other a maximum of 290 shrimp per kilo. If adopted the Danish Fishery Ministry will enforce the regulations.

Fisheries Associations May Realign: The Skagen Fisheries Association, the largest group in the Danish Fisheries Association, is considering withdrawing and joining the West Jutland Fisheries Association, or remaining separate from each. The division into two large fisheries associations reportedly has weakened the Danish fishing industry with respect to the Government and in negotiations with other countries. A further division would be unfortunate at a time when important negotiations with regard to fishing limits and market problems are in prospect. (Fisheries Attache report of July 28, 1961, United States Embassy, Copenhagen.)

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MARINE OIL SUPPLY, DISTRIBUTION, AND FOREIGN TRADE, 1959-1960:
In 1960 the production of crude marine oils declined, while imports from Peru increased. Danish exports of marine oils were down more than 50 percent because Danish products could not compete with Peruvian products on the world market.

Supply: Denmark's supply of crude marine oils in 1960 amounted to 38,393 metric tons as compared with 43,316 tons in 1959. This decline was due to smaller stocks, and a drop in both domestic production and imports. Fish oil (including herring oil) was the type of crude marine oil most widely produced and exported. But production of fish oil was down slightly in 1960 because low fish meal prices reduced the fishing effort for industrial fish. Prior to 1960 the production of fish oil had for several years steadily increased.

Herring oil was the leading crude marine oil imported in 1959, but imports of that oil fell sharply in 1960 and other crude marine

Denmark (Contd.):

Table 1 - Denmark's Supply and Distribution of Crude Marine Oils, 1959-1960

Item	1960					1959				
	Fish Oil Including Herring Oil	Whale Oil	Seal Oil	Other Crude Marine Oils	Total Marine Oils	Fish Oil Including Herring Oil	Whale Oil	Seal Oil	Other Crude Marine Oils	Total Marine Oils
	(Metric Tons)									
Available Supply:										
Beginning stocks, Jan. 1	3,169	2,028	N.A.	N.A.	5,197	3,781	3,671	N.A.	N.A.	7,452
Production	18,171	N.A.	263	N.A.	18,434	19,656	N.A.	256	N.A.	19,912
Imports	1/1,902	3,051	22	9,787	14,762	1/8,177	7,164	8	603	15,952
Total Supply	23,242	5,079	285	9,787	38,393	31,614	10,835	264	603	43,316
Distribution:										
Exports	5,776	32	285	285	6,378	13,550	105	264	440	14,359
Domestic utilization	12,868	4,134	-	9,502	26,504	14,895	8,702	-	163	23,760
Ending stocks, Dec. 31	4,598	913	N.A.	N.A.	5,511	3,169	2,028	N.A.	N.A.	5,197
Total Distribution	23,242	5,079	285	9,787	38,393	31,614	10,835	264	603	43,316

N.A. - Not available.
1/Herring oil.

oils were imported in larger quantities (table 1).

The supplies of crude marine oils were disposed of in 1960 through exports of 6,378 tons and a domestic utilization of 26,504 tons.

Table 2 - Denmark's Imports of all (Crude and Refined) Marine Oils, 1960

Product and Origin	Metric Tons
Whale Oil, Crude:	
Norway	3,046
Sweden	5
Total	3,051
Sperm Oil, Crude:	
Norway	18
Netherlands	9
West Germany	48
Total	75
Seal Oil, Crude:	
Norway	22
Herring Oil, Crude:	
Iceland	795
Norway	212
West Germany	795
Peru	100
Total	1,902
Marine Oils for Medical and Veterinary Purposes:	
Iceland	575
Norway	1,433
United Kingdom	72
West Germany	549
Total	2,629
Other Marine Oils, Crude:	
Iceland	92
Norway	40
United Kingdom	4
Morocco	135
Portuguese West Africa	1,062
Chile	688
Paraguay	48
Peru	7,644
Total	9,713
Other Marine Oils, Refined:	
Norway	50
United Kingdom	1/
West Germany	32
Peru	48
Total	130
Grand Total	17,522

1/Less than 1 metric ton.
Note: Does not include a small amount of hardened marine oils included in the general classification of "marine oils and other animal oils, hardened."

Exports were down more than 50 percent, but domestic utilization was expanded by 2,744 tons.

On the Danish market, imported fish oil from Peru replaced some ot the domestic herring oil and imported whale oil.

Imports: Denmark imported a total of 17,522 tons of all (crude and refined) marine

Table 3 - Denmark's Exports of All (Crude and Refined) Marine Oils, 1960

Product and Destination	Metric Tons
Whale Oil, Crude:	
West Germany	1/
New Zealand	32
Total	32
Seal Oil:	
France	249
West Germany	36
Total	285
Herring Oil, Crude:	
Norway	2,900
Sweden	499
Netherlands	18
West Germany	2,359
Total	5,776
Marine Oils for Medical and Veterinary Purposes:	
Finland	27
Norway	36
Sweden	75
Holland	9
West Germany	170
Venezuela	1
Total	318
Other Marine Oils, Crude:	
Norway	31
Sweden	1/
Holland	102
Italy	12
West Germany	140
Total	285
Other Marine Oils, Refined:	
Norway	98
Sweden	1/
United Kingdom	16
West Germany	217
Total	331

1/Less than 1 metric ton.
Note: Does not include a small amount of hardened marine oils included in the general classification of "marine oils and other animal oils, hardened."

Denmark (Contd.):

oils in 1960. Peru was the major supplier of marine oils to Denmark with 7,644 tons of "other crude marine oils," 100 tons of crude herring (really anchovy) oil, and 48 tons of "other refined marine oils" (table 2). Imports from Peru were stimulated in 1960 because of low prices. The next important supplier was Norway, followed by Iceland, West Germany, and Portuguese West Africa.

Denmark's imports of only crude marine oils decreased slightly, from 15,952 tons in 1959 to 14,762 tons in 1960. Imports of crude herring oil decreased sharply in 1960, while imports of other crude marine oils increased. Crude marine oil imports from the United States consisted of only 519 tons of crude herring oil in 1959 and none in 1960.

Exports: Denmark exported 7,027 tons of all (crude and refined) marine oils in 1960, mostly consisting of crude herring oil to Norway and West German (table 3). But exports of crude herring oil to those two countries declined in 1960 as compared with 1959. (Excerpt from April 14, 1961, report from the United States Embassy, Copenhagen.)

Note: See Commercial Fisheries Review, December 1960 p. 70.

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FISH MEAL SUPPLY, DISTRIBUTION, AND FOREIGN TRADE, 1959-1960:

Supply: Denmark's over-all supply of fish meal in 1960 amounted to 73,100 metric tons--14,800 tons less than in 1959. This decline was due to a 20,200-ton decrease in domestic production, which lowered total output to 50,600 tons in 1960. The decline in domestic production was due to the low prices for fish meal in 1960.

Smaller production in 1960 was, in part, offset by increased imports, which rose from 13,400 tons in 1959 to 18,900 tons in 1960. Exports declined from 58,800 tons in 1959 to 31,800 tons in 1960 because Denmark could not compete with Peru's low-priced meal.

But in 1960 domestic utilization was stimulated by the lower prices and it rose from 25,500 tons in 1959 to 37,100 tons in 1960 (table 1).

Table 1 - Denmark's Fish Meal Supply and Distribution, 1959-1960

	1960	1959
	(1,000 Metric Tons)	
Available Supply:		
Beginning stocks, Jan. 1	3.6	3.7
Production	50.6	70.8
Imports	18.9	13.4
Total Supply	73.1	87.9
Distribution:		
Exports	31.8	58.8
Domestic utilization (as feed)	37.1	25.5
Ending stocks, Dec. 31	4.2	3.6

Imports: Denmark imported a total of 18,868 tons of fish meal in 1960, made up of herring meal and other fish meal. Iceland supplied the bulk of both types of meal (table 2).

Table 2 - Denmark's Imports of Fish Meal, 1960

Product and Origin	Quantity
	Metric Tons
Herring Meal:	
Iceland	4,314
Norway	3,581
Ireland	280
Total	8,175
Other Fish Meal:	
Iceland	10,097
Norway	593
United Kingdom	3
Total	10,693
Grand Total	18,868

Exports: Denmark exported a total of 31,770 tons of fish meal in 1960. Of this total, 30,104 tons consisted of herring meal, about one-half of which was exported to the United Kingdom. (Excerpt from report of April 14, 1961, from United States Embassy, Copenhagen.)

Table 3 - Denmark's Exports of Fish Meal, 1960

Product and Destination	Quantity
	Metric Tons
Herring Meal:	
Finland	670
Sweden	1,509
Czechoslovakia	156
France	265
Greece	22
Netherlands	2,470
Ireland	2,583
Italy	40
Poland	148
Switzerland	2,952
United Kingdom	14,505
West Germany	2,093
Austria	110
East Germany	2,400
Mexico	40
Cyprus	15
Malaya	50
Singapore	76
Total	30,104
Other Fish Meal:	
Sweden	169
Greece	15
Poland	400
Switzerland	20
West Germany	841
East Germany	200
Egypt	4
Malaya	17
Total	1,666
Grand Total	31,770

Faroe Islands

FROZEN FILLETS SHIPPED TO U. S.:

The export of quick-frozen fish fillets from the Faroe Islands to the United States was renewed late in July 1961 with a shipment of 175 metric tons after a lapse of 6 months due to lack of supplies. The refrigerator ship also picked up 200 tons of fillets in Greenland. Shipments were expected to be made directly from the Faroe Islands to the United States in late summer.

* * * * *

LOANS FOR FISHING VESSELS:

The Faroese Fishing Vessel Mortgage Finance Corporation has financed an important part of the modernization of the Faroese fleet since its establishment in 1955. In the year ending March 31, 1961, it made ten loans to Faroese companies, totaling 8,645,000 kroner (almost US$1.2 million). Sixty-eight loans, amounting to 30,061,502 kroner (about $4.4 million) have been made since 1955. Capital and reserves amount to about 10,000,000 kroner (almost $1.4 million). Consideration is being given to loans to 18 long-line cutters, totaling about 11,300,000 kroner ($1.6 million).

* * * * *

FAROESE FISHERMEN TO HAND LINE INSIDE ICELANDIC FISHING LIMITS AREA:

On August 2, 1961, the Danish Foreign Ministry released the following communique:

"By an exchange of notes between Denmark's Ambassador in Reykjavik and the Icelandic Foreign Minister an agreement was concluded yesterday concerning permission for Faroese fishermen to fish with hand lines off Iceland.

"According to this agreement, ships registered in the Faroe Islands have the right to fish with hand lines within Iceland's fishing limits in the areas and at the times of the year, where and when Icelandic vessels are permitted to fish with bottom trawls or floating trawls in accordance with the existing regulations.

"Vessels registered in the Faroe Islands, furthermore, have the right to fish with hand lines in the area between 4 and 8 nautical miles within Iceland's fishing limits at Kolbeinsø.

"The agreement is in force without time limits, but either party may terminate it by giving 6 months' notice."

* * * * *

FISHERY OFF WEST GREENLAND PRODUCES WELL:

Although the Faroe Islands fishery off West Greenland varied throughout the season, the latter part has been excellent for the 2,350 motorboat fishermen based on land at Faeringehavn, Kangarssuk, Borgshavn, and Ravns Storø. Thirty-two motor boats with 4-5 men crews, often including one or two young Greenlanders, landed 1,249 metric tons of fish, mostly cod, in Faeringehavn, since mid-June. The fish are filleted and frozen in a modern shore plant and exported directly to the United States.

The Faroe Islands fishermen also conduct a fishery from June to September on the West Greenland coast with 5 motherships--schooners with 4-5 smaller boats which fish farther out to sea. The catch is salted and returned to the Faroe Islands.

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LINE FISHERMEN BOTHERED LESS BY FOREIGN TRAWLERS:

Faroe Islands line fishermen report with satisfaction that foreign trawlers have bothered them less since the Danish frigate Niels Ebbesen followed and shot at the trawler Red Crusader from Aberdeen, Scotland. (Reports of July 28 and August 8, 1961, from the Fisheries Attache, United States Embassy, Copenhagen.)

France

TUNA INDUSTRY, 1960:

In 1960, only 17,920 metric tons of tuna were caught by French tuna vessels along the Mediterranean and Atlantic coasts, 20 percent less than in 1959 when 22,472 tons were landed. In the Atlantic ports, 17,010 tons of "white" tuna (believed to be albacore) and 550 tons of "red" tuna (believed to be bluefin) were landed, and in the Mediterranean ports 360 tons of "red" tuna were landed. Minimum and maximum tuna prices are fixed by agreement between the fishermen and canners. Because of the decline in "white" tuna production, the average ex-vessel price rose

France (Contd.):

5.5 percent to the agreed ceiling of 2.31 new francs per kilo (US$420 a short ton).

"White" tuna is fished from June to October in the open Atlantic, a great distance from the continental shelf. The tuna area is at the same latitude as the Bay of Biscay. For several years, the French tuna fishermen have also been catching yellowfin tuna off the coast of Senegal.

The number of vessels engaged in tuna fishing totaled 468 in 1960, compared with more than 600 in 1958. In 1960, 37 percent of the vessels fished with live bait with an average catch more than double that of the vessels fishing without live bait. Most of the tuna clippers are small vessels of less than 26 meters (85 feet) in length.

St. Jean-de-Luz continued to be the leading tuna port of France, followed by Concarneau.

France's Tuna Landings at Principal Ports, 1960

Port	Quantity
	Metric Tons
Saint-Jean-de-Luz	4,200
Concarneau	3,300
Les Sables-d'Olonne	1,900
Douarnenez	1,400
Saint-Guenole	1,100
Ile d'Yeu	1,000
Other ports	5,020
Total	1/17,920

1/Does not include tuna caught by French vessels in African waters and landed in French and foreign ports.

In addition to landings at French ports, a number of French vessels engaged in tuna fishing in African waters and caught an estimated 13,000 tons during 1960. Of that total, 4,840 tons were landed in French ports as frozen tuna for the canning industry, mostly at Concarneau (2,110 tons) and Bayonne (1,990 tons). The balance was either directly exported or landed at Dakar for the Senegalese canneries. (United States Embassy, Paris, report dated May 15, 1961; French fishery periodical, Maree de France, August 1961.)

German Federal Republic

FISH MEAL PRICES, AUGUST 4, 1961:

Prices reported at Hamburg Commodity Exchange as of August 4, 1961, for fish meal delivered ex-Hamburg warehouse, or c. & f. West German sea port were as follows:

Type of Fish Meal	Protein Content (%)	Delivery	DM/Metric Ton	US$/Short Ton
German fish meal	50-55	loco/ prompt	542.50	123.04
" " "	55-60	" "	552.50	125.31
" " "	60-65	" "	575.00	130.41
" " " std. brands	60-65	Aug.	620.00	140.62
" herring meal 1/	64-68	prompt/Aug.	637.50	144.59
Peruvian fish meal	65-70	loco/ Aug.	547.50	124.18
" " "	65-70	Sept.-Dec. 1961	567.50	128.71
South African fish meal	65-70	Aug.	600.00	136.08
Angola fish meal	65-70	loco/ Aug.	610.00	138.35
Portuguese fish meal	50-55	prompt/Sept.	537.50	121.91
Icelandic herring meal	70-75	Aug.	660.00	149.69

1/Delivered coastal location.
Notes: (1) Values converted at rate of 4.0 deutschemarks equal US$1.
(2) "Loco" means where and as it is at the time of sale, and all subsequent expenses to be at buyer's account.

As compared with July 5, 1961, fish-meal prices on the Hamburg Exchange on August 4, 1961, were averaging about $1.50 a short ton higher for both domestic and imported fish meal. (United States Consulate, Bremen, August 9, 1961.)

* * * * *

GERMANS PERMITTED TO FISH INSIDE TWELVE MILES OF ICELANDIC COASTS:

West German fishing vessels have been given access to the same areas within the Icelandic 12-mile fishing limits as were made available to British vessels in the Icelandic-British settlement of March 11, 1961. West German vessels will be permitted to fish within those areas until March 10, 1964, which is also the terminal date for British operations. By the agreement the West German Government recognized Iceland's 12-mile fishing limits, including the extended base lines. The agreement between Germany and Iceland was formalized by an exchange of notes on July 19,

German Federal Republic (Contd.):

1961. (From a July 20 report of the United States Embassy, Reykjavik.)

According to German newspaper accounts, West Germany recognized formally the 12-mile zone in exchange for phase-out fishing rights for West German vessels.

On September 1, 1958, the Government of Iceland unilaterally extended its fishing limits from 3 to 12 miles. Although the West German Government did not recognize de jure the extension, the German trawler operators respected the 12-mile zone because Bonn was not willing to guarantee them indemnification against the possible seizure of their vessels. The trade voiced its displeasure over the extension on several occasions, however, and claimed that the potential catch off Iceland would be reduced by 10,000 to 25,000 metric tons per year. West

West German Fish Catch off Iceland, 1956-60

Year	1,000 Metric Tons	% of Total West German Landings
1960	102.6	17.3
1959	99.2	14.6
1958	118.2	18.2
1957	92.9	13.5
1956	106.1	15.3

German statistics for the fish catch off Iceland in 1959 and 1960 would seem to bear out this assertion, as they reveal a decline annually from 1958. However, 1958 was an unusually good year so far as the catch off Iceland waters was concerned. (From August 7, 1961, report of United States Consulate, Bremen.)

Ghana

GOVERNMENT STRIVES FOR SELF-SUFFICIENCY IN FISH PRODUCTION:

The Government of Ghana opened the New Tema fishing harbor on August 8, 1961, and signed a ŁG10,000 (US$28,000) fishing agreement with a British fishing company on August 11, 1961, as part of an intensified program to attain self sufficiency in fish production.

The Tema fishing harbor is the first harbor to be constructed in Ghana solely for the use of fishing vessels. It can accommodate vessels 130-180 feet in length. A temporary cold-storage plant is now in use at Tema with a capacity of 1,000 metric tons, but work will begin soon on a new plant with a capacity of 4,500 tons. This plant will be located in the industrial area near the fishing harbor. In addition, there will be a shipyard in which wooden vessels up to 70 feet and steel vessels up to 150 feet in length will be constructed. To provide adequate marketing facilities, a large wholesale market will also be established.

As a result of a tuna survey of the Guinea Gulf by a United States tuna fishing and cannery company, the Ghana Government has ordered six modern fishing vessels from the United Kingdom. These vessels will be 130 feet in length and will form the nucleus of a long-range fishing fleet. The vessels are to be delivered in November 1961. The British fishing company will provide managerial and technical personnel for the fishing fleet under the ŁG10,000 agreement concluded with the Government.

The Government has increased the budget for fisheries from ŁG262,000 ($733,600) to ŁG850,000 ($2,380,000) for 1961/62. These funds will be used to equip the new fishing harbor, develop the long-range fishing fleet, and to expand the outboard motor plan for native canoe fishermen. The Government will also operate a school to provide technical training to Ghanaian personnel. This school will be operated in conjunction with the Ghana Nautical College.

Total consumption of fish in Ghana is estimated at 55,000 metric tons and local production is presently running at 26,000 tons. The catch of the six long-range fishing vessels is expected to increase landings sharply and this potential catch, combined with the expanding outboard motor plan for native fishermen, would make Ghana self sufficient in fish production. This would effect a significant saving in foreign exchange and help ease the hardship arising out of the recent introduction of an austere fiscal policy, the United States Embassy in Accra reported on August 14, 1961.

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SOVIET TECHNICAL ASSISTANCE FOR FISHERIES:

The Government of Ghana signed an agreement on June 13, 1961, with the Soviet Union for the construction of 13 fishery industries

Ghana (Contd.):

in Ghana as a part of the Soviet technical assistance program.

Some weeks earlier, the Government had signed a contract for the purchase from a British firm of four large purse-seiners and two trawlers which will be operated with the advice and assistance of a large United States west coast canning company.

Also, Ghana Cold Stores Ltd., a consortium of West European firms with Ghana Government participation, has announced the completion of a £G470,000 (US$1.3 million) cold-storage plant at Tema to serve the fishing industry. It is not clear how the Soviet projects will tie in with these other fishery developments. (Excerpted from a United States Embassy, Accra, report of July 1961.)

Greenland

EXPLORATORY FISHING FOR NEW GROUNDS AND FISHERIES:

Greenland's Fishery Research organization was making plans to start an intensive exploratory research program in mid-August 1961 along the east coast of Greenland to find new, large fishing grounds, according to the August 2 issue of Kristlige Dagbladet. The research is being undertaken, in part, for the benefit of the Faroe Islands fishermen who may lack fishing grounds after the expansion of the fishing limits around Iceland.

At the same time, the Greenland National Council is strongly interested in the research because development of a fishery along the southern Greenland coast naturally will benefit the local population. There is close cooperation in the program between Greenland, Denmark, and the Faroe Islands. The program will be led by the chief of Denmark's Ocean and Fishery Research Station in the Faroe Islands, and the Faroese vessel Pollur will be used. There will be experiments with long-line and hand-line gear as well as biological research to determine the size, age, and quality of the cod population. The research will be of importance to the cod fishery in West Greenland since there is a steady exchange between the populations in east and west Greenland waters. While this research is going on, Norway also will send its own expedition to the area.

The Royal Greenland Trade organization is arranging to send a Danish salmon fisherman to Greenland for three months so that he can demonstrate methods and gear suitable for a Greenland salmon fishery. It has been found that salmon from Canada and Scotland migrate to Greenland in the winter months and that there may therefore be a possibility for a salmon fishery along Greenland's coasts. There is great interest in the outcome of such a fishery. (United States Embassy, Copenhagen, report of August 8, 1961.)

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FISHERY PRODUCTS BUYERS VISIT GREENLAND:

A United States and an English buyer of West Greenland frozen and canned fish and shellfish visited Greenland fishing ports and plants to observe the conditions under which frozen cod, ocean catfish (wolffish), and shrimp in glass are produced. The largest production areas are Julianehaab, Narssaq, Godthaab, Sukkertoppen, Holsteinsborg, Egedesminde, and Christianshaab. The large shrimp cannery in the latter port will surpass previous pack records this year. (As reported on July 28, 1961, by the Fisheries Attache, United States Embassy, Copenhagen.)

Guatemala

NEW LAW ON DEEP-SEA FISHING:

A new law on deep-sea fishing has been issued by Guatemala as Congressional Decree 1470 of June 23, 1961. It was published in El Guatemalteco of July 11, 1961 (Volume 162, No. 32), and became effective July 14, 1961.

The new law provides that the Ministry of Agriculture is authorized to issue licenses to firms and individuals for ocean fishing on a large scale. Such fishing is defined as: (1) boats with engines, (2) boats equipped to fish in deep waters, (3) boats of not less than 30 tons with refrigeration, and (4) operational bases on shore with plants to process fish and provision boats. Licenses are to be issued by the Hunting and Fishing Department with validity not to exceed ten years and licenses are not transferable. They are subject to the provisions of Government Decree 1235 and fishing boats are subject to the provisions of Government Decree 1329 of October 8, 1932, Regulations for Registration and Inscription of Vessels and Boats (Diario de Centro America, October 15, Vol. 5 No. 78.)

There are three types of licenses:

Type A--Guatemalans or Guatemalan enterprises with at least 50 percent Guatemalan capital using Guatemalan flag boats and unloading the catch in Guatemalan ports for processing and later total or partial export--no charge for annual operating license and no dockage charges.

Type B--Alien persons or Guatemalan enterprises with only 25-50 percent Guatemalan capital using both Guatemalan and foregin flag boats and unloading the catch in Guatemalan ports for processing and later total or partial export--no charge for annual operating license for Guatemalan flag boats and Q30-120 for foreign flag boats according to tonnage; dock-

Guatemala (Contd.):

age charges (good for ten days and one departure from port) are Q25 per ton (of boat) for shrimp fishing and Q5 per ton for other types of fishing.

Type C--Guatemalan and alien persons and enterprises using foreign flag boats and sending catch fresh directly to foreign markets--charge for annual operating license is Q40-160 according to tonnage; dockage charges (good for ten days and one departure from port) are Q50 per ton (of boat) for shrimp fishing and Q10 per ton for other types of fishing.

The net tonnage of boats must be accredited to the Ministry of Agriculture by showing the certificates of registry. For A and B licenses the boats must be registered in Guatemalan ports. Before B and C licenses are issued cash deposits must be made of Q2,000 and Q5,000, respectively, and the licensees must have Apoderados or representatives in Guatemala City.

B and C licensees may use motherships if they are registered in Guatemalan ports. The motherships will be charged the usual B or C license fees plus a 100 percent surcharge on the dockage charges. However, in such a case, there will be no dockage charges on the fishing boats.

A and B licensees fishing for shrimp must disembark anything else caught at Guatemalan ports in a percentage to be determined in each case by the Ministry of Agriculture.

Fines, seizures, license revocations, and the like will be governed by the provisions of the new law as well as those of Government Decree 1235. Any foreign government participation after the license has been obtained, will be a cause for its revocation. If no specific penalty for a violation of this law or Government Decree 1235 is provided, then the penalty will be a fine of Q100-5,000 with a double amount for a second offense. (Excerpt from July 24, 1961, report from United States Embassy, Guatemala.)

Presidential Decree 550 of February 22, 1956 (published in El Guatemalteco of February 22, Vol. 146, No. 69) is annulled. This decree of one article empowered the Ministry of Agriculture to issue licenses valid not to exceed ten years to fish in lakes, rivers, and territorial seas. Licenses were subject to an advisory opinion from the Hunting and Fishing Section of the Ministry. Article 134 of Government Decree 1235 of January 18, 1932 (Diario de Centro America, January 21, Vol. 3, No. 56) is annulled. This decree is the Law Regulating Fish Culture and Fishing. Article 134 merely provided that infractions not otherwise penalized were to be punished by ten days' imprisonment commutable at one quetzal per day with a double penalty for a second offense.

Note: One quetzal equals US$1.

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SHRIMP FISHING BASE TO BE ESTABLISHED BY JAPANESE:

The Japanese Fishery Agency approved the joint application of two Japanese fishing firms to engage in a joint shrimp fishing venture with Guatemalan interests. The shrimp fishing base will be established at Champerico on the Pacific coast of Guatemala. Plans call for constructing a 100-ton capacity cold-storage plant (a 20-ton capacity cold-storage plant already exists) and six 60-ton vessels; contracting 14 other 60-ton vessels to fish for the company; and employ 3 30-ton vessels as scout boats. Catch is expected to be exported to the United States. (Suisan Tsushin, August 5, 1961.)

Translator's Note: In addition to the two aforementioned firms, two other firms had submitted a joint application to establish a shrimp base in Guatemala. The Fishery Agency had some qualms about permitting the establishment of two Japanese shrimp bases in Guatemala and sought to have the four firms consolidate their operations, but neither group agreed. As of August 1961, it was not known whether the Fishery Agency would permit another shrimp base to be established in Guatemala.

Iceland

ADDITIONAL DEVALUATION MEASURES AFFECT FISHING INDUSTRY:

Following announcement of the 43 kronur to the US$1 devaluation on August 3, 1961, Iceland's President signed a second decree, announced August 4, which further implemented the devaluation.

This provided, among other things, that stocks of fish products sold abroad before July 31 would fetch the seller the predevaluation price only. Devaluation gains thereby incurred will be used by the Treasury to defray devaluation losses when servicing certain international obligations, e.g., repayments to the International Monetary Fund.

The noteworthy provision of the decree, however, was the levy of a 6 percent export tax on the f.o.b. value of most fish products produced after July 31. The decree provides that receipts from this tax will all be plowed back into the fisheries sector: 32 percent for insurance premiums on fishing vessels; 30 percent for fisheries mortgage fund; 30 percent for fisheries loan fund; and practically all the remainder for fisheries research. (As reported August 10, 1961, by United States Embassy, Reykjavik.)

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COMMITTEE TO STUDY TRAWLER OPERATIONS:

The Icelandic Minister for Fisheries in July 1961, appointed a three-member committee to study trawler operations. It will be chaired by the Director of the Fisheries Association.

Concerned by the continued losses in Icelandic trawler operations, the Government

Iceland (Contd.):

decided to take this step in an attempt to determine what can be done to facilitate a profitable return to the trawlers. Such questions as size of crew, taxation, insurance, public vs. private ownership, and debt burden will be examined. (From a July 27, 1961, report of the United States Embassy, Reykjavik.)

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FAROESE GET ICELANDIC FISHING RIGHTS:

Press reports indicate that agreement was reached in Reykjavik on July 21, 1961, on Faroese fishing rights in Icelandic waters. According to the press accounts, the Faroese have been accorded greater rights than were recently given to British fishermen, since the Faroese use lines rather than trawls in those waters. Faroese fishermen have been granted the right to fish with lines within the 12-mile Icelandic fishery limits in limited zones during certain periods of the year. The agreement will not become effective until approved by the Danish and Icelandic Governments. (Excerpt from United States Embassy, Copenhagen, report of July 28, 1961.)

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FISHERY EXPORTS AND EUROPEAN ECONOMIC INTEGRATION:

On July 11, 1961, the Icelandic Minister of Commerce spoke to the Chamber of Commerce on Iceland and European economic integration. He pointed out that Iceland would have to take a stand soon on joining the European Common Market (EEC) and the European Free Trade Association (EFTA), since if they amalgamated Iceland would be confronted by a common tariff against its fishery exports.

While he mentioned difficulties certain protected indigenous Icelandic industries would face through membership, he also hinted at areas where Iceland would be able to make concessions to Western Europe, in regard to "rights of foreigners to land their catches and operate processing plants in Iceland." (United States Embassy, Reykjavik, report of July 13, 1961.)

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FISHERY TRENDS, FIRST QUARTER 1961:

Landings: In the first quarter of 1961, Iceland's fish catch was 17.2 percent less than the catch for the same period of 1960, but about the same as for the same period of 1959.

Labor disputes immobilized the important motorboat fishing fleet and processing plants of the Westman Islands early in 1961 when there was a heavy demand for frozen cod and haddock fillets in the United States. Icelandic cod landings declined by 37.9 percent, from 94,720 metric tons during the first quarter of 1960 to 58,820 tons during the same period of 1961. On the other hand, the unseasonable appearance of many herring schools off the southwest coasts made possible the landings of 19,537 tons of herring during the first quarter of 1961, whereas virtually none had been caught during the same period for the last few years. Ocean perch operations were slowed by the absence of a sales contract with the Soviet Union.

Deliveries of fish for processing declined appreciably during the first quarter of 1961 as compared with the same period in 1960. The declines were 39.4 percent for freezing purposes, 36.4 percent for stockfish, and 23.3 percent for salting.

The trend of recent years, away from the use of trawlers and towards increased use of motorboats, was reversed slightly during the first quarter of 1961 (table 1).

Table 1 - Iceland's Groundfish Landings by Type of Vessel, January-March 1959-1961

Landed By	1961	1960	1959
	(Percent)		
Motorboat	80.4	83.2	68.6
Trawler	19.6	16.8	31.4
Total	100.0	100.0	100.0

Partially due to the labor dispute which tied-up the motorboat fleet in the Westman Islands, the amount of groundfish landed by motorboat during the first quarter of 1961 decreased tremendously as compared with the same quarter of 1960. On the other hand, the amount of herring landed by motorboats in the 1961 quarter increased principally because the herring appeared earlier this year. Trawler landings of groundfish decreased slightly for the 1961 period, while herring landings increased (table 2).

Although the Trawler Owners Association prohibited landings by their vessels in Hull and Grimsby, England, until the fisheries

Iceland (Contd.):

Table 2 - Iceland's Fish Landings by Fishery and Type of Vessel, January-March 1960-61

Fishery	1961			1960		
	Motorboat	Trawler	Total	Motorboat	Trawler	Total
	(Metric Tons)					
Groundfish 1/	70,152	17,097	87,249	106,895	21,560	128,455
Herring 2/	17,038	2,499	19,537	348	552	900
Shellfish	382	0	382	n.a.	n.a.	n.a.
Total	87,572	19,596	107,168	107,243	22,112	129,355

1/Drawn weight. 2/Round weight. N.A. - Not available.

dispute with Great Britain was settled on March 11, 1961, these trawlers did a lively business at West German ports. Their access to the British fishing ports for a time after the settlement was limited by the Association as a result of a protest strike in Hull and Grimsby.

Table 3 - Iceland's Fish Production, January-March 1961

How Utilized	January-March		
	1961	1960	1959
	(Metric Tons)		
Herring 1/ for:			
Oil and meal	5,961	135	13
Freezing	5,045	125	89
Salting	6,037	78	-
Fresh on ice landed abroad	2,494	562	-
Groundfish 2/ for:			
Fresh on ice landed abroad	7,813	7,618	4,022
Freezing and filleting	41,047	67,701	66,510
Canning	-	-	47
Salting	22,952	29,909	22,084
Stockfish	12,691	19,950	14,699
Home consumption	1,969	2,282	1,714
Oil and meal	777	995	1,185
Shellfish for:			
Freezing	3/270	-	-
Canning	3/112	-	-
Total production	107,168	129,355	110,363

1/Whole fish.
2/Drawn fish.
3/Believed to be mostly shrimp.

As to the Icelandic fishing limits agreement with Great Britain, it remained to be seen whether the terms would favor Icelandic trawlers as against the motor fishing vessels. Icelandic trawlers did gain access for three years with British trawlers to certain additional pockets, lying between the 4- and 12-mile limit, but all trawling was excluded for the first time in sizable, rich southwestern fishing areas by the pushing seaward of base lines.

Exports: The failure of exports of fishery products to stand out in the first quarter of 1961, after a mediocre quarter in 1960, is because of relatively small carry-over stocks at the end of 1960, the labor dispute which hampered production early in 1961, and the continued difficulty of the trawlers in operating successfully. A favorable development, however, was the substantial price increases which took place in world markets for dried and frozen fish, fish meal, and fish oil.

Table 4 - Icelandic Fishery Landings by Principal Species, January-March 1959-1961

Species	1961	1960	1959
	(Metric Tons 1/)		
Cod	58,820	94,720	74,566
Haddock	11,557	13,195	8,424
Saithe	2,408	2,709	2,785
Ling	2,317	2,874	1,171
Wolffish (catfish)	4,212	4,232	3,304
Cusk	2,875	4,763	2,061
Ocean perch	3,770	4,271	16,667
Halibut	419	569	332
Herring	19,537	900	102
Other	1,253	1,122	951
Total	2/107,168	3/129,355	3/110,363

1/Except for herring which are landed round, all fish are drawn weight.
2/Includes 382 tons of shellfish.
3/Does not include shellfish.

There was a radical trade shift in exports during the 1961 quarter, away from the Soviet Bloc countries. No frozen fish were shipped to the Soviet Union during the first quarter of 1961, whereas 7,640 metric tons had been shipped during the first three months of 1960. No agreement on frozen fish sales to the Soviet Union had been reached by the end of the 1961 quarter. Also, no frozen fish were shipped to East Germany. These exports had consisted largely of salted herring. The only Bloc country which imported Icelandic frozen fish during the quarter was Czechoslovakia, but even that country imported considerably less than it had during the same quarter of 1960.

United States imports of Icelandic frozen fish increased by 77.2 percent during the first quarter of 1961 as compared with the same quarter of 1960.

During the first quarter of 1961, Great Britain's imports of Icelandic frozen fish were valued at 20.9 million kroner (US$548,556)--imports of stockfish were

Iceland (Contd.):

valued at 38.6 million kroner (US$1.0 million), most of which was transshipped to Africa. Britain also imported fish and herring meal valued at 31.6 million kroner (US$829,396). Thus, the United States and Great Britain became Iceland's leading fishery markets, with West Germany third. The Soviet Union, which had usually been Iceland's leading trading partner during recent years, was fourth.

With the settling of the Icelandic fishing limits dispute with Great Britain, Iceland considered full or associate membership in the European Free Trade Association. Possible EEC and GATT membership were also studied. (As reported by United States Embassy, Reykjavik, July 10, 1961.)

Production of Fishery Products and Byproducts: Icelands total production of fishery products and byproducts for the first quarter of 1961 amounted to 72,895 metric tons. Cured fishery products, especially wet salt fish and salted herring, were produced in the greatest quantity, followed closely by frozen fishery products composed mainly of frozen fish fillets, offal, and herring. (Aegir, July 12, 1961.)

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FISH PRODUCTION, JANUARY-APRIL 1961:

How Utilized	January-April	
	1961	1960
	. .(Metric Tons) . .	
Herring[1] for:		
Oil and meal	11,089	135
Freezing	6,758	125
Salting	6,038	78
Fresh on ice landed abroad	3,143	562
Groundfish[2] for:		
Fresh on ice landed abroad	10,617	9,634
Freezing and filleting	66,203	97,146
Canning	-	-
Salting	45,480	50,789
Stockfish	32,385	38,933
Home consumption	2,690	3,111
Oil and meal	1,110	1,490
Shellfish[3] for:		
Freezing	304	-
Canning	126	-
Total production	185,943	202,003

1/Whole fish.
2/Drawn fish.
3/Believed to be mostly shrimp.

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HERRING FISHERY TRENDS:

Landings: Iceland's total landings of north coast herring as of June 24, 1961, amounted to 5,818 metric tons as compared to 15,338 tons as of the same date in 1960. The bulk of the herring was good enough for salting as compared with none during the same period of 1960.

Although landings had been light, schools of herring were reported plentiful. The number of vessels participating in the north coast herring fishery this year is believed to be fewer than in the summer of 1960 when there were 261 vessels engaged in that fishery.

Early in July huge shoals of herring appeared off the east coast where virtually the whole herring fleet was engaged. In 24 hours on July 10 nearly 70,000 barrels of herring were landed. As of July 8, a total of 28,832 tons of herring had been salted compared with only 3,746 tons by the same time last year. Last year, however, more herring had been used for meal and oil than this season as the herring were of lower quality.

Soviet Herring Contract Signed: The press finally confirmed on July 13 that the Herring Production Board had signed a contract with the Soviet Prodintorg for delivery of 50,000 barrels of salted herring to the Soviet Union from the north coast herring catch. The contract provides that Prodintorg may decide within a month whether it wishes to purchase an additional 10,000 barrels.

This news broke following press announcements that virtually all existing contracts had been filled by a flood of high-quality herring into the processing ports. Existing contracts for 230,000 barrels were largely with Sweden and Finland. Negotiations continued regarding a 6,000-barrel contract with West Germany. (United States Embassy, Reykjavik, reports dated June 29 and July 13, 1961.)

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FISHERY TRENDS, JULY 1961:

Although the main Icelandic January-May fishing season catch (excluding herring) was estimated at 21 percent less than for the main 1960 fishing season, prices received were substantially higher. The 1961 summer herring season started off extremely well, with large and high-quality catches off the north coast. By July 22, 107,055 metric tons of herring had been landed and 42,980 tons salted, compared with 68,220 tons landed and only 10,090 tons salted by July 22, 1960. Likewise the flatfish catch off the south coast in June and July was good.

Iceland (Contd.):

During the second quarter of 1961 the Freezing Plants Corporation began construction of a modern processing and distribution plant in the Netherlands to serve the European Economic Community area--$250,000 was loaned by the Import-Export Bank of Washington to cover foreign exchange costs of the project. (From a July 31, 1961, report of the United States Embassy, Reykjavik.)

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SUMMER HERRING FISHERY GOOD:

The Icelandic herring fishery is the best in 22 years, according to August 5, 1961, newspaper reports from Reykjavik. Iceland has experienced its best herring salting season--46,286 metric tons had been salted by early August 1961 (14,268 tons by the same time last year) out of a catch of 160,976 tons (91,174 tons last year).

All herring caught since August 5 was being used for fish meal and oil. Some industrial products plants ran out of storage space for the oil produced early in August.

With Iceland's reduction plants swamped with fish, Norwegian vessels introduced a new feature by purchasing and loading 1,350 metric tons of herring caught by Icelandic vessels on August 8. This was carried to oil and meal plants in Norway for processing.

The Soviets have contracted for 60,000 barrels of salt herring, whereas 120,000 barrels are stipulated in their trade agreement with Iceland. On August 10 the press announced Soviet interest in negotiating for more summer salt herring. (From United States Embassy, Reykjavik, report of August 10, 1961.)

India

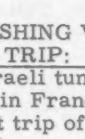
JAPANESE TO INCREASE CAPITAL OF JOINT INDIAN-JAPANESE FISHING COMPANY:

A large Japanese fishing company, which has established a joint Indian-Japanese fisheries company in India, has submitted an application to the Japanese Fishery Agency to increase by 500,000 rupees (US$104,000) the capital of the company in India. The money will be used to construct fishing vessels and expand plant facilities. The plan for the joint fishing company calls for the construction of three 58-ton trawlers; three 12-ton trawlers; an ice plant with a daily capacity to produce 10 tons of ice and store 50 tons of ice, as well as freeze five tons of fish; a 75-ton capacity cold-storage plant; and a 25-ton capacity refrigerated plant. (Translated from the Japanese periodical Suisan Tsushin, July 14, 1961.)

Israel

NEW TUNA FISHING VESSEL LANDS FIRST TRIP:

The new Israeli tuna fishing vessel, which was delivered in France early this year, landed its first trip of 200 metric tons during August. The vessel, with a crew of 14 fishermen, was at sea for over three months. (United States Embassy in Tel Aviv, August 16, 1961.)



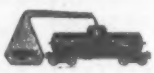
Italy

FISH OIL IMPORTS FROM DOLLAR AREA LIBERALIZED:

An Italian Ministerial Decree in July this year liberalized fish oils for importation from the "Dollar Area." The exact tariff items involved are:

15.04 - Fats and oils from fish and aquatic mammals, also refined.

15.14 - Spermaceti (from whales and other cetaceans) crude, pressed or refined, also artificially colored.



Japan

COMMITTEE STUDIES REVISION OF INTERNATIONAL NORTH PACIFIC FISHERIES CONVENTION:

The Japanese government-industry committee specially established to study the tripartite (Japan, Canada, and the United States) International Convention for the High Seas Fisheries of the North Pacific Ocean was scheduling regular meetings from early

Japan (Contd.):

August on to discuss Japan's position concerning the principle of "voluntary abstention" in preparation for the forthcoming Eighth Annual Meeting of the North Pacific Fisheries Commission scheduled to be held in Tokyo in late October 1961.

In a commentary, the July 19, 1961, issue of the Japanese periodical Suisan Keizai Shimbun states that Canada and the United States claim that the salmon and halibut resources are being fully exploited by them and Japan must voluntarily abstain from fishing for salmon and halibut in the waters to the east of 170° W. longitude. Under these terms, Japan will forever not be able to fish for salmon and halibut (in the waters to the east of 170° W.), even if the salmon and halibut resources should improve greatly since it is likely that both the United States and Canada would then increase their catch efforts. The periodical adds that the question of voluntary abstention must be studied carefully to see whether it has any basis at all from the standpoint of world trends and the Law of the Sea, as well as from a biological standpoint, and that Japan plans to press the discussions on "voluntary abstention" strongly at the Eighth Annual Meeting.

Earlier reports had stated that the government-industry committee was officially designated as the Fishery Agreement Research Association within the Japan-United States-Canada Fishery Subcommittee of the Northern-Seas Fisheries Resources Research Council.

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GOVERNMENT POLICY ON FISHERIES:

On August 16, 1961, the Japanese Minister of Agriculture and Forestry convened a two-hour staff meeting of all department and section heads in the Fishery Agency and broadly spelled out a policy for the Agency to follow. His talk was reported in part in the Japanese periodical Nippon Suisan Shimbun of August 18, 1961, as follows:

1. The fisheries industry of Japan seems to be harboring a feeling of being stifled. Fishery Agency must pursue a policy which will dispel this feeling.

2. The one area where Government policy seems to be lagging is the coastal fishery. Greater emphasis must be devoted to the promotion of that fishery.

3. Subsidies in the past have been spread too thin over a wide area, and have not been effective. In the future, greater emphasis should be placed on the promotion of coastal fishing enterprises in appropriate fishing districts.

4. Subsidies for the construction of beaches (many Japanese fishing villages do not have docks and utilize beaches for landing and launching vessels) have been small. Additional funds should be procured for this project and long-range plans for this project perhaps be made.

5. Management of the large fishing companies does not pose problems. As for the distant-water fisheries, care must be exercised in the management of those fisheries with international implications; as for all other distant-water fisheries, the Agency should adopt an aggressive policy from the standpoint of promoting the development of the national economy.

6. Emphasis should be placed in the adjustment of the port consolidation plan now under study.

7. Greater effort should be placed on public relations. One way of making the Japanese people aware of fisheries is perhaps to construct aquariums.

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APPLICATIONS TO PURSE-SEINE TUNA IN ATLANTIC OCEAN STILL NOT APPROVED:

The applications submitted by the three Japanese fishing companies affiliated with one large Japanese fishery firm to purse-seine tuna in the Atlantic Ocean have not yet been acted upon by the Fishery Agency, although 40 days had passed, as of the end of July 1961 since the three companies submitted their applications. Permission is being withheld at the present time inasmuch as a purse-seine fishery in the Atlantic Ocean, if licensed, would conflict with the existing long-line tuna fishery. (Translated from the Japanese periodical Shin Suisan Shimbun Sokuho, July 28, 1961.)

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SHIPMENTS OF ATLANTIC TUNA TO JAPAN LAG BEHIND QUOTA:

The Japan Export Frozen Tuna Fisheries Association established a plan in the spring of 1961 whereby 10,000 metric tons of Atlan-

Japan (Contd.):

tic Ocean tuna would be shipped to Japan by common carriers to help stabilize the Italian tuna market. A recent survey made by the Association shows that 2,817 metric tons of frozen tuna (955 tons of yellowfin, 644 tons of big-eyed, 1,101 tons of black marlin, and 117 tons of miscellaneous species) were transported to Japan and a total of 28 fishing vessels and 10 carriers participated in the plan, reports the fishery periodical Suisan Tsushin of July 24, 1961.

Poor fishing in the Atlantic Ocean since spring and firm market conditions in Europe are given as factors which resulted in a much smaller amount of Atlantic tuna being brought back to Japan than had been anticipated.

Editor's Note: As of early July, tuna fishing in the Atlantic had improved, according to reports.

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ATLANTIC TUNA FISHERY CATCHES OF BIG-EYED TUNA AND SPEARFISH TO BE SHIPPED TO JAPAN:

The Japanese Export Frozen Tuna Fisheries Association planned to ship back to Japan via common carrier the big-eyed tuna and spearfish which were being taken in large quantities (reported to be about 70 percent of total catch) by the Japanese Atlantic tuna fleet. A petition asking for shipment to Japan was being prepared for submission to the Fishery Agency. Italy and Yugoslavia were reported not to care too much for big-eyed tuna and spearfish, but the Japanese tuna vessels fishing in the Atlantic Ocean (numbering 56 vessels as of mid-August 1961) were compelled to fish for these species due to poor yellowfin fishing. However, fish sausage producers in Japan were reported to be facing a serious shortage of tuna and the Export Frozen Tuna Fisheries Association hoped to divert the Atlantic Ocean catch of big-eyed tuna and spearfish to Japan to fill this demand. (Translated from Japanese periodical Suisan Keizai Shimbun, August 11, 1961.)

Japanese Projected Transshipments of Atlantic Big-Eyed Tuna and Spearfish to Japan, August-October 1961

Port of Transshipment	1961			Total
	Aug.	Sept.	Oct.	
	(Metric Tons)			
Dakar, Senegal	100	75	-	175
Cristobal, Panama Canal Zone	50	-	-	50
Port of Spain, Trinidad	250	700	200	1,150
Las Palmas, Canary Is.	-	100	-	100
Freetown, Sierra Leone	-	-	200	200
Total	400	875	400	1/1,675

1/In the text of the original article the amount of 1,775 metric tons was used, which appears to be correct since one other trade journal (Suisan Tsushin, August 9) reported 1,775 tons. That journal stated that Japan planned to transship to Japan 400 metric tons in August, 975 tons in September, and 400 tons in October, but did not mention specific ports of transshipment.

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BIG-EYED TUNA CATCH OFF WEST AFRICA REPORTED GOOD:

Catch of big-eyed tuna by Japanese vessels as of mid-July 1961 increased in the Atlantic Ocean. Big-eyed tuna is said to make up about 60-70 percent of total tuna catches in the Atlantic. According to a Japanese newspaper, this change in catch composition may necessitate changing the price of tuna landed in Italy. Normally, yellowfin makes up about 80 percent of total tuna landings, with the other species of tuna making up the remaining 20 percent, and the tuna price (recently raised to $285 a ton from $280 a ton) in Italy is fixed on the basis of this catch ratio. However, with big-eyed tuna now contributing an overwhelming 60-70 percent of the tuna catch, the 20-80 ratio no longer applies, which means that present prices may have to be lowered. The Japanese Exporters Association is planning to convene a meeting of its Atlantic Tuna Committee to discuss this situation.

The main tuna fishing grounds in the Atlantic as of mid-July were located between 0° and 5° W. longitude and south of the equator between 15° S. and 30° S. latitude. The good catches may help to ease the tuna shortage. (Japanese periodical Shin Suisan Shimbun Sokuho of July 19, 1961.)

Editor's Note: Japanese long-line vessels in the Atlantic fishing tuna are operating far to the south this year, farther south than they normally do, in an attempt to locate better fishing grounds.

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TUNA VESSELS IN ATLANTIC OCEAN SWITCHING TO ALBACORE FISHING:

Part of the Japanese fleet of 56 tuna long-liners fishing in the Atlantic Ocean in August 1961 were reported to have switched to albacore fishing off Brazil. Normally, albacore fishing does not peak until after October, but it seems that those making the switch to albacore fishing figure that they may just as well hunt for albacore than other species of tuna

Japan (Contd.):

since fishing is poor anyway. (Translated from Japanese periodical Suisan Tsushin, August 10, 1961.)

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FIRM PLANS TO USE CANARY ISLANDS TO STORE FROZEN TUNA FOR CZECHOSLOVAKIA:

A large Japanese fishing company which hopes to export frozen yellowfin tuna to Czechoslovakia plans to utilize Las Palmas, Canary Islands, as a temporary storage center for tuna to be exported to Czechoslovakia via Hamburg, Germany. The company is reported to be planning on building a large cold-storage plant at Las Palmas. This cold-storage plant is to be used primarily for handling the catch of the company's expanding Atlantic trawl fleet. On August 26, 1961, this company expected to send the newly-built stern trawler Ibuki Maru, 2,500 gross tons, the largest trawler ever to be built in Japan, to the Atlantic Ocean. (Shin Suisan Shimbun Sokuho, August 10 & 12, 1961.)

Translator's Note: Concerning exports of frozen tuna to Czechoslovakia, which is on a barter basis, two other large Japanese fishing companies had an agreement to deliver a total of 1,050 metric tons of frozen tuna to Czechoslovakia between June and September 1961. The frozen tuna were to be delivered to Hamburg, from whence they were to be shipped by rail to Czechoslovakia. Czechoslovakia has stated that she would likely import more tuna, pending the examination of the quality of the 1,050 tons of frozen tuna under contract. In the meanwhile, according to earlier reports, the first firm mentioned above has been negotiating to export 600 metric tons of frozen tuna to Czechoslovakia. As far as is known, the first firm has two large trawlers operating off the west coast of Africa. In addition to the Ibuki Maru, the construction of which was just completed, the first firm plans to construct three large trawlers in 1962 for the Atlantic Ocean fishery.

As for cold-storage facilities in Las Palmas, one of the two firms that was to deliver the 1,050 tons completed the construction of a 2,000-ton capacity cold-storage plant at Las Palmas in June 1961 to handle the catch of its trawl fleet, last reported to total five vessels.

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DISTANT-WATER REFRIGERATED TUNA VESSELS INCREASING IN NUMBER:

The number of "refrigerated tuna fishing vessels" is increasing yearly, according to a survey made by the Japanese Frozen Tuna Association. Construction of "refrigerated tuna fishing vessels" in 1959 totaled 45; in 1960, 49 vessels; and in 1961 well over 40 vessels are expected to be constructed.

As of December 1960, of a total of 621 distant-water fishing vessels, 232 or over one-third fell in the category of "refrigerated tuna vessels." They totaled 106,920 gross tons, with a total freezing capacity of 2,365 metric tons of tuna per day, and a cargo capacity of over 61,200 tons. Of the refrigerated tuna vessels, 103 are of the 300-400 gross ton size, 56 of 400-500 gross tons, 41 of 200-300 gross tons, and most of the balance of over 500 gross tons.

Vessels of 200 to 500 gross tons are reported to be most efficient. Vessels over 1,000 gross tons (of which there are 12) are all company-owned fishing vessels. (Translated from Japanese periodical Suisan Keizai Shimbun, July 18, 1961.)

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SIZE OF DISTANT-WATER TUNA LONG-LINE FLEET:

Statistics compiled by the Export Frozen Tuna Fisheries Association show that Japanese distant-water tuna long-line vessels presently number 333 vessels, totaling 131,492 gross tons, and that the construction of these vessels is increasing yearly.

Japanese Construction of Tuna Long-Liners, 1956-60

Year	No. of Vessels
1960	77
1959	49
1958	26
1957	26
1956	17

As of August 1961, 56 distant-water tuna vessels were reported to be operating in the Atlantic Ocean, the same as last year for the same period; over 100 vessels were estimated to be fishing in the area southeast of Hawaii[1/] (catch reported to consist mainly of big-eyed tuna); between 30-40 vessels were fishing for Australian bluefin off the west coast of New Zealand, where fishing was reported to be good; and between 70-80 vessels were said to be fishing in the Indian Ocean. (Suisan Tsushin, August 10, 1961.)

1/Translator's Note: According to available information, the Japanese tuna vessels were primarily fishing in the area bounded by latitudes 10° N. and 5° S. and longitudes 115° W. to 155° W. in early June 1961.

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Japan (Contd.)

ITALIAN-JAPANESE TUNA INDUSTRY MEETING:

The following discussions took place at the tuna industry meeting held in Rome on July 19-21, 1961, between members of the Japanese and Italian tuna industries. According to Japan's wishes, participation at this meeting was limited to industry members only, and the meeting was attended by Japanese and Italian (including Sicilian) tuna industry members.

The Japanese delegation discussed tuna fishing conditions in the Atlantic Ocean and stated that due to poor fishing in the Atlantic Ocean, Japanese fishing was being extended by about two months. But some vessels were moving to the eastern Pacific, where good fishing was reported. As a result of these developments, Japan claimed that frozen tuna exports to Italy will probably not exceed 20,000 metric tons as compared to 26,000 metric tons in 1960.

The Italian tuna industry claimed that the 15,000 or so metric tons of frozen tuna which Japan plans to export to Yugoslavia this year are finding their way into Italy as canned or frozen fish, thereby disrupting the Italian market, and requested that tuna exports to Italy be increased.

Concerning reject claims on frozen tuna, Japan took the stand that if Italy should press this matter strenuously, Japanese vessel owners would decline to land fish in Italy. Also, if Italy should adopt a claims system similar to that in the United States, then Japan would raise the export price of tuna to Italy to the same level as exports to the United States. The Italian tuna industry expressed divergent views on reject claims. Members of the Italian tuna association were strongly for legislation whereby green meat tuna would be rejected and brown meat tuna classified as a grade B product. Non-members claimed that emphasis should be placed on the acquisition of raw materials and took a negative attitude regarding such legislation.

The meeting ended with Italy and Japan agreeing to establish a joint investigation committee, subject to ratification by Japan before August 31, 1961, whereby the committee would study the over-all problem of claims and report the result of their investigation to their respective industries. Tenure of this committee is six months. (Translated from Japanese periodicals Suisan Tsushin, August 2; Suisan Keizai Shimbun, July 29, 1961.)

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ITALIAN-YUGOSLAV MARKET TRENDS FOR FROZEN TUNA:

A group of Japanese fishery businessmen who visited Italy and Yugoslavia in July 1961, returned to Japan and reported that Italian buyers seemed to want to import 30,000 tons of Japanese frozen tuna in the Italian fiscal year 1961 (July 1961-June 1962). Cold-storage facilities are available at only a few points in Italy and the total capacity is 7,000 metric tons. The Italians are stepping up plans for expansion of cold-storage equipment, notably in Sicily.

As a whole, the cold-storage equipment in Yugoslavia is adequate. Operations in Yugoslavia are integrated from cold storage to canning, including can making. Fish in Yugoslavia was scarce in July and their interests to buy Japanese frozen tuna was keen.

Heretofore frozen tuna exported by the Japanese to Europe has been primarily yellowfin. In mid-1961 the percentage of big-eyed increased substantially. As a result of negotiations with Italian and Yugoslavian buyers, it was agreed that if big-eyed should be mixed more than 20 percent, the price should be reduced by $15 per metric ton for that part of the excess. The base price is $285 a metric ton c.i.f. Therefore, the price of big-eyed may be said to be $270 a ton. In the past there had been no instance when big-eyed made up more than 20 percent of any one lot. (Translation from the fishery periodical Nippon Suisan Shimbun, August 10, 1961.)

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TUNA MOTHERSHIP SENT TO SOUTH PACIFIC IN AUGUST 1961:

A Japanese fishery firm in July 1961 applied to the Fishery Agency for permission to dispatch the tuna mothership Jinyo Maru, 7,200 gross tons, to the South Pacific. The Fishery Agency was expected to grant permission.

Jinyo Maru was scheduled to depart Hakodate on August 13 and arrive on the tuna fishing grounds in the vicinity of the Fiji Islands on August 26, and be en route home around

Japan (Contd.):

Catch Target of Jinyo Maru Tuna Mothership	
Species	Target
	Metric Tons
Yellowfin (fillet and round)	1,500
Albacore (round)	1,600
Big-eyed (fillet)	400
Swordfish (fillet)	1,000
Shark (fillet)	400
Other species (round)	100

November 30. This mothership will be accompanied by 50 fishing vessels and has a catch target of 5,000 metric tons. (Translated from the Japanese fishery periodical Suisan Tsushin, July 27, 1961.)

Translator's Note: Jinyo Maru was employed as a salmon mothership during the summer.

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TUNA LONG-LINER SENT TO VENEZUELA:

Chiba Prefecture, Japan, which established a joint fishing base in Venezuela two years ago, planned to send the tuna long-liner No. 27 Kompira Maru (308 gross tons) to Cumana, Venezuela, to fish for tuna in the Caribbean Sea. The vessel was scheduled to arrive in Cumana on August 20, 1961. As of July 1961, one 88-ton long-line vessel from Chiba Prefecture was fishing out of Cumana. (Translated from the Japanese periodical Nippon Suisan Shimbun, July 17, 1961.)

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TUNA RESEARCH COUNCIL ORGANIZED:

A permanent Tuna and Skipjack Research Council was organized and a general organizational meeting was held on August 8, 1961. Its aim is to promote fishery sciences regarding tuna and skipjack fisheries, to conduct research and investigations, and to improve fishery techniques. Membership consists of central and prefectural government agencies and institutes, fishery associations, and a number of interested companies associated with the tuna industry, notably makers of fishing gear and instruments.

The council is divided into three departments: (1) Fisheries Investigation and Research (oceanography and fishing condition), (2) Fisheries Science and Techniques (fishing vessel, fishing gear, etc.), and (3) Fish Processing. The secretariat's office is in the Tuna Building, Tokyo. (As reported by Japanese periodical early in August 1961.)

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VALUE OF FROZEN TUNA EXPORTS TO U. S., FIRST QUARTER 1961:

The value of Japan's exports of fresh and frozen tuna (practically all frozen) increased from US$5,028,000 during January-March 1960 to US$5,218,000 during January-March 1961. (U. S. Embassy, Tokyo, August 9, 1961.)

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SUPPLIES OF FROZEN ALBACORE AND YELLOWFIN TUNA FOR EXPORT LOW:

Japanese supplies of frozen albacore and yellowfin tuna for export to the United States were still inadequate as of early August 1961 and a seller's market was in the making. Export prices as of August were US$330-$335 per short ton f.o.b. for albacore and $280 for yellowfin. The yellowfin market was firm. (Translated from the Japanese periodical Suisan Tsushin, August 8, 1961.)

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EXPORT PRICES RAISED ON CANNED TUNA IN BRINE:

The Japan Export Canned Tuna Packers Association decided on August 15, 1961, to raise the export prices of all canned lightmeat tuna in brine by 20 cents a case as of the August sale. This means that canned lightmeat tuna other than yellowfin will now sell for $7.50 a case and canned yellowfin $7.60 a case, all prices f.o.b. Japan for a 48 7-oz.-can case. Price of canned whitemeat (albacore) shall be raised for the September sale, but the packers plan to negotiate this matter first with the exporters. The price of lightmeat yellowfin tuna in brine rose from $6.80 a case during January-June 1961, to $7.40 a case in July, and to $7.60 a case in August. Lightmeat other than yellowfin rose from $6.80 a case January-June 1961, to $7.30 a case in July, to $7.50 a case in August.

The Packers Association also agreed on putting on one sale per month between August and October. At each of these sales, 100,000 cases of canned lightmeat and canned whitemeat tuna was to be offered.

Exporters are not expected to protest this increase inasmuch as the decisions arrived

Japan (Contd.):

at the meeting were discussed at a conference held a day earlier between packers and exporters. (Part of information from Suisan Tsushin, August 16, 1961.)

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FROZEN TUNA EXPORT PRICES INCREASED:

Albacore and yellowfin tuna are in short supply in Japan and this shortage has firmed prices for these two species. The export price of frozen albacore is reported to be $330 to $335 a short ton f.o.b. Japan, and that for yellowfin tuna is said to be $280 a ton f.o.b. Japan. (From Japanese periodical Suisan Tsushin, August 7, 1961.)

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CANNED TUNA IN BRINE SALES TO U. S. IN 1961:

If the sale of Japanese canned tuna in brine should be carried out according to the targets announced by the Canned Tuna Packers Association (100,000 cases each of whitemeat and lightmeat tuna to be sold in each of the months of August, September, and October), sales this year to the United States will total 2,185,000 cases (1,700,000 cases of whitemeat tuna and 485,000 cases of lightmeat tuna).

This means that Japanese canned tuna will account for about 88 percent of the quota of 57,114,714 pounds (about 2,720,000 cases) of canned tuna in brine which may be imported into the United States during the calendar year 1961 at the 12½-percent rate of duty. Any imports in excess of the quota are dutiable at 25 percent ad valorem. (As reported in Suisan Tsushin, August 17, 1961.)

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OFFERINGS OF CANNED TUNA IN BRINE FOR EXPORT:

For Sale No. 11 which started on August 17, 1961, the Tokyo Canned Tuna Sales Company offered canned tuna in brine as follows: 100,000 cases of whitemeat tuna and 50,000 cases of lightmeat tuna. An additional 50,000 cases of lightmeat tuna were to be offered towards the latter part of August. The lightmeat tuna were being offered under the new price of $7.60 a case for yellowfin and $7.50 a case for tuna other than yellowfin.

Sales of canned tuna to date (Sale No. 1 to No. 10) total 1,585,500 cases, of which 1,400,500 cases were whitemeat tuna and 185,000 cases lightmeat tuna. Last year in late July, 1,480,000 cases of canned tuna were sold for export, of which 800,000 cases were whitemeat tuna and 780,000 cases lightmeat tuna. (As reported in Japanese periodical, Suisan Tsushin, August 17, 1961.)

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SALMON CATCH BY NORTH PACIFIC MOTHERSHIP FLEETS, 1959-1960:

The total catch of salmon by the 12 Japanese mothership fleets in the North Pacific in 1960 amounted to 26,423,807 fish as compared with 42,331,078 fish taken in 1959, a decrease of 15,907,271 fish, or 37.5 percent (table 1). The pink salmon catch in 1960 was 90 percent less than in 1959; chums were down 18 percent, and cohoes or silvers dropped 32 percent. But sockeye or red catches were up 42 percent and chinook or king catches up 165 percent as compared to 1959.

The percentage composition of the three major species in the 1960 catch was sockeyes 49.1 percent, chums 39.8 percent, and pinks 7.1 percent. In 1959 sockeyes represented 21.5 percent of the total catch, chums 30.3 percent, and pinks 44.5 percent.

With pink, chum, and sockeye salmon appearing in good numbers in 1959 and with good catches of sockeye and chum salmon in 1960, little difficulty was experienced by the mothership fleets in attaining their quotas.

At the Japanese-Soviet Northwest Pacific Fisheries Commission meeting in 1959, the Japanese catch quota was set at 85,000 metric tons. Of that quota, the Japanese Fishery Agency assigned 70,830 metric tons to the mothership fleet and 14,170 metric tons to the land-based salmon fleet at Hokkaido. In 1960, by Commission action, Japan was assigned a catch quota of 67,500 metric tons. A division of the 1960 quota, by the Fishery Agency, gave the mothership fleet 54,000 metric tons and the land-based fleet 13,500 metric tons.

Faced with reduced catch quotas, action was taken late in 1959, by Japanese interests, to reduce fishing effort for the 1960 season by 4 motherships and 50 catcher boats. In 1960, the fleet consisted of 12 motherships and 410 catcher boats, compared with 16 motherships and 460 catcher boats in 1959.

There was some variation in the length of fishing seasons between the two years. Fishing commenced on May 21 in 1959, terminating when the quota was filled on July 25. In 1960 fishing started on May 25 and ended when the quota was reached on August 5. The Commission had set August 10 as the closing date for fishing in both years.

Table 1 - Catch of Salmon by Japanese North Pacific Mothership Fleets, 1959-60

Months	1960	1959
	. . (Number of Fish) . .	
May	2,242,221	5,599,630
June	11,552,644	18,508,913
July	12,149,699	18,222,535
August	479,243	-
Total	26,423,807	42,331,078

Under Commission regulations an over-all tonnage quota for salmon is set but does not limit the numbers of fish of a given species, except for red salmon, that may be taken to attain the quota. In the case of red salmon both tonnage and numbers apply. Within the total quota set in 1959, the red salmon catch was limited to 16,000 metric tons or 8 million fish and in 1960, 15,500 metric tons or 7.5 million fish.

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Japan (Contd.):

FISHERY AGENCY STUDYING REDUCTION OF NORTH PACIFIC SALMON MOTHERSHIP FLEETS:

The Japanese Fishery Agency is studying plans to reduce the 12 salmon motherships and 410 catcher vessels operating in the North Pacific by 2 or 3 motherships and by 70 to 100 catcher vessels, respectively, and the Eastern Hokkaido land-based salmon fleet of 415 vessels by 20 to 30 percent. The Agency is also studying ways and means of compensating vessel owners whose vessels may be affected under such a plan of reduction.

In 1960, the Agency reduced the number of North Pacific salmon motherships by four (from 16 to 12) and the catcher vessels by 90. (Translated from the July 19 and 23, 1961, issues of the Japanese periodical Suisan Keizai Shimbun.)

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MOTHERSHIP SALMON FLEETS TRY NEW NYLON GILL NETS:

The Japanese mothership-type salmon fleets appear to be convinced of the merits of a new special monofilament nylon gill net described as a "transparent net." The fleets plan to use these types of nets next year on a large scale.

The "transparent net," produced jointly by two Japanese firms, was supplied to all 12 fleets engaged in the mothership-type salmon fishery on an experimental basis this year. Catch per unit of gear is said to have been about twice that of nylon-type gear normally used and cost was limited to less than 60 percent of regular gear. The net is most effective when used in the ratio of 3 shackles of regular nylon-type gear and one shackle of monofilament gill net.

Other Japanese net manufacturers hope to start producing "transparent nets" in the near future and experiments are now being conducted to utilize the "transparent net" for other fisheries. The success of this new gear is said to mark a revolutionary step in the field of gear development.

Japanese has been experimenting with a monofilamnet gill net for three years. Experiments were first conducted by utilizing hatchery fish, and in 1960 the Japanese salmon mothership fleets used this gear on a trial basis. Although extremely effective, it was found to be difficult to handle due to its bulkiness (stiffness). Also, knot slippage occurred. These shortcomings now appear to have been overcome. In 1961 the salmon motherships were furnished with about 5,000 shackles (Japanese shackle is approximately 150 feet long), the land-based Eastern Hokkaido salmon fleet with about 1,500 shackles, and the Japan Sea pink salmon fleet about 500 shackles.

Advantages of the monofilament gill net are described as follows: (1) transparent characteristic of net makes it most effective; (2) gilled fish are not scarred; (3) gilled fish do not fall off; (4) net does not "roll" (entangle) in rough sea; (5) net more durable than existing nets. (Suisan Keizai Shimbun, August 6; Suisan Tsushin, July 31, 1961.)

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SALMON MOTHERSHIPS AND CATCHER BOATS NEGOTIATE SEASON'S SALMON PRICES:

Negotiations between Japanese salmon mothership operating firms and the union of catcher boats on the ex-vessel price of salmon caught during this year's operations hit a snag as of mid-July 1961.

On July 15 the first arrivals from North Pacific salmon operations were the salmon factoryships Chiyo Maru and Meisei Maru. They landed at the port of Hakodate.

After the first early shipment of half-pound cans of pink salmon at US$11.80 f.o.b. per case (48 cans), a small amount of the same species in tall cans was shipped to the United States at $23 per case (48 cans). The last price in 1960 was $20 for 48 1-pound cans of pink salmon, but this sale seemed to consist of land-packed fish instead of factoryship-packed fish. (Translated from Japanese periodical dated July 17, 1961.)

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SALMON VESSEL OWNERS REQUEST PERMITS FOR TUNA FISHING:

The special committee established by the Japanese National Federation of Salmon Fishing Cooperative Associations to study the full utilization of salmon fishing vessels has submitted a request to the Fishery Agency to permit approximately 120 salmon fishing vessels presently without tuna fishing licenses to go

Japan (Contd.):

tuna fishing. This number only includes those vessels which want to go tuna fishing.

According to the Federation, of the 410 salmon catcher vessels which engaged in the salmon mothership fishery this year, over 200 do not possess tuna fishing licenses. These vessels are compelled to lay up their vessels at the termination of the salmon season (which is for about two months, June and July). Furthermore, salmon vessel owners are greatly disturbed over the future development of the salmon fishery, which has until now shown a continued downward trend as a result of fishing agreements between the Soviet Union and Japan. Some of them want to be allowed to go tuna fishing, which they consider the best way to efficiently utilize their vessels during the off-season for salmon.

To this request, the Fishery Agency Director stated that he wanted to look into the matter carefully before arriving at any decision. (As reported in Suisan Keizai Shimbun, August 15, 1961.)

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EXPORTS OF FISHERY PRODUCTS DECLINE IN FIRST HALF 1961:

During the first half of 1961, Japan's world exports of fish and fish products amounted to 133,226 metric tons valued at US$63.5 million. This represented a sharp decline when compared with exports of 159,630 tons valued at $104.3 million during the second half of 1960. Exports during the first half of 1961 also were less than the 147,070 tons valued at $70.4 million, which Japan exported in the first half of 1960. (United States Embassy, Tokyo, August 9, 1961.)

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FROZEN SABLEFISH EXPORTED TO UNITED STATES:

A Japanese fishing firm is reported to have exported early in August 1961 a total of 10 metric tons of frozen silver cod or sablefish to the United States through San Francisco. The fish were 5 pounds and up, and the price was 20-22 cents per pound c.i.f. Negotiations are in progress for the export of sablefish in other forms.

Because other fishing companies are also interested in this export trade, 700-800 tons may be exported by the end of 1961. The catch of sablefish is reported to be unexpectedly good this year. (Translated from the Japanese periodical Suisan Keizai Shimbun, August 8, 1961.)

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EXPORTS TO UNITED STATES OF MAJOR CANNED FISHERY PRODUCTS, 1959-1960:

Japanese exports to the United States of canned fish, fruits, and other edible food products amounted in 1960 to 4,049,739 actual cases valued at US$36.5 million as compared to 1959 exports of 4,479,281 cases valued at $47.8 million. The bulk of the canned food exports consisted of fishery products. Exports in 1960 were up significantly for canned products other than fish and shellfish and down substantially for canned fishery products. (Translated from Japanese sources.)

Product	1960		1959	
	Cases	Value	Cases	Value
		US$		US$
Crab Meat:				
King	169,124	4,501,553	301,719	6,748,606
Korean	46,782	815,661	35,784	583,803
Other	2,670	41,958	13,181	209,289
Total crab meat	218,576	5,359,172	350,684	7,541,698
Salmon-trout	225,622	4,446,217	794,929	13,959,945
Tuna:				
Albacore in brine	974,642	9,254,975	1,002,775	10,277,411
Other tuna in brine	30,341	215,558	28,773	214,061
Skipjack in brine	1,020,967	6,870,575	1,023,947	7,389,642
Other	1,998	8,525	4,143	25,011
Total tuna	2,027,948	16,349,633	2,059,638	17,906,125
Sardines	452	3,450	441	3,136
Mackerel-pike	51,867	116,183	22,151	94,697
Short-necked clams	24,443	290,172	25,875	262,136
Oysters:				
In oil	142,057	986,492	116,932	827,311
Other	130,348	921,842	110,835	840,614
Total oysters	272,405	1,908,334	227,767	1,667,925

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IMPORTS OF FROZEN SHRIMP:

Japanese importation of shrimp has come under an automatic license system since July 12, 1961. As of early July 1961, import contracts have included about 1,700 metric tons of shrimp (about 3.7 million pounds). It is estimated that some 900 tons would come from Mexico, 500 tons (about 1.1 million pounds) from the United States, 200 tons from Communist China, and 100 tons (catch of Communist China) from Hong Kong. It is said that of the total tonnage of shrimp to be imported, 75 percent is going to the five big fishing companies of Japan. (Translated from Japanese periodical dated July 19, 1961.)

Japan (Contd.):

Editor's Note: According to United States export statistics, for January-April 1961 a total of 197,900 pounds of frozen shrimp of U. S. production were shipped to Japan and 817,900 pounds of frozen shrimp of foreign origin (mostly Mexican) were re-exported to Japan.

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BERING SEA BOTTOMFISH FISHERY TRENDS:

According to available information in July 1961, the 20 Japanese mothership-type long-line fleets operating in the Bering Sea between Cape Olyutorski and Cape Navarin are catching much less halibut than anticipated and are placing emphasis on catching sablefish, which are now being exported to the United States.

Fishing as whole on a per-vessel basis appears poor, the primary reason being the tremendous concentration of fleets in a relatively confined area. In June 1961, the fishing companies requested that they be allowed to fish elsewhere in the Bering Sea and south of the Aleutian Islands. This request was denied, but the latest move by these companies to expand their operations elsewhere in the Pacific, Indian, and Atlantic Oceans is now being carefully studied by the Japanese Fishery Agency. (Translated from several Japanese periodicals, various dates in July 1961.)

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THREE FISHERY FIRMS TO FISH KING CRAB IN BRISTOL BAY IN FALL 1961:

The Japanese Fishery Agency has decided to permit three large Japanese fishing firms to fish for king crab in Bristol Bay in the fall of 1961 on an experimental basis. The Agency's intention is to let the three companies operate canning factoryships ranging in size from 1,000 to 1,500 gross tons. The fleets were assigned a combined quotas of 700 metric tons of frozen king crab. The three companies will be permitted to operate a king crab fleet under joint management in the spring of 1962, if the fall operations prove successful. The Agency also is reported not to have any objections to having still another company operate a king crab factoryship on an experimental basis, if that company wishes to do so.

The motherships to be operated are the Eshin Maru with 4 catcher boats, the Chichibu Maru with 6 catcher boats, and No. 31 Banshu Maru with 6 catcher boats. Fishing operations were scheduled to begin in August with a cut-off date set for October 31, 1961.

The Japanese fishing firm which owns the newly-constructed Eshin Maru (1,494 gross tons) had planned to send the mothership to the Indian Ocean in August to fish for tuna, but when the Fishery Agency announced its willingness to issue permits for crab fishing, the firm diverted the vessel to the Bering Sea as a king crab freezership.

In 1961, Japan is operating two king crab motherships in the Bristol Bay area. They are the Tokei Maru, 5,386 gross tons, which produced 80,000 cases of king crab between April 12 and July 2, and the Shinyo Maru 5,630 gross tons, which was assigned a quota of 180 metric tons of frozen king crab. According to available information, Shinyo Maru, which is also packing frozen fish, was still on the fishing grounds as of early August. The Tokei Maru is jointly operated by three fishing companies and is licensed as a commercial king crab factoryship. Shinyo Maru is operated by one fishing firm and is licensed as an experimental king crab freezer vessel. (As reported by various Japanese periodicals and the United States Embassy in Tokyo.)

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FISHING FIRM TO OPERATE FISH MEAL FACTORYSHIP OFF ANGOLA:

A large Japanese fishing firm was scheduled in October 1961 to dispatch its fish meal factoryship Renshin Maru (14,094 gross tons) to the waters off Angola to operate for a period of 75 days (production target--7,000 to 8,000 metric tons of fish meal), November 1961-February 1962. On August 17 this year the Fishery Agency approved the firm's request to engage in this new venture on an experimental basis. Also, on the same day, Ministry of International Trade and Industry approved an allocation of foreign funds for the purpose. The Government of Portugal has already approved this venture. The vessel had been operating in the Bering Sea.

The Japanese firm has an agreement with the Angolan state (planning) corporation at Luanda, Angola, whereby the small fishing vessels affiliated with the corporation will sell their catches of sardines to the Renshin Maru for processing into fish meal. Produc-

Japan (Contd.):

tion over and beyond the established target shall be turned over to the Angolan corporation, for which processing fees shall be charged for labor. The fish meal brought back by the factoryship is expected to be entered into Japan free of duty. Although the waters off Angola are rich in resources, fishmeal processing facilities on land are inadequate and Angola is looking forward to the arrival of the Renshin Maru.

Japan annually imports from 30,000 to 50,000 metric tons of fish meal, and as of mid-July had already imported about 30,000 metric tons of fish meal from Peru this year. The Japanese firm hopes to produce sufficient fish meal so that a balance between domestic consumption and domestic production can be attained, thereby eliminating the necessity of importing foreign meal. Concrete plans are to be developed after a thorough survey is made of fishing conditions off the coast of Angola. (Translated from various Japanese periodicals.)

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PACKING OF CANNED JACK MACKEREL CONTINUES:

Japanese packing of jack mackerel for export has been in progress since April 1961. Shipments to the sales company as of early July amounted to over 500,000 cases, but were expected to reach 600,000 cases by the end of July. As of early July about 150,000 cases were still unsold. (Translated from Japanese periodical dated July 15, 1961.)

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OVERSEAS TRAWL FISHERIES:

Japanese periodicals in 1961 have carried numerous articles concerning the plans of the major Japanese fishing companies to increase their overseas trawling operations. It appears that the success achieved by Japan's overseas trawl fleet has moved the Japanese trawl industry to greatly accelerate trawl fishery operations overseas. This success has prompted the Japanese companies operating mothership-type long-line fleets in the Bering Sea to request the Fishery Agency that they be allowed to operate their long-line fleets in the same general grounds fished by the distant-water trawl fleets.

A major problem which the Fishery Agency faces is in working out satisfactory adjustments in the operations of the distant-water trawl fishery to accommodate the mothership-type long-line fleets, and the Fishery Agency seems to be studying this problem from the over-all perspective of the existing trawl fisheries, such as the East China Sea and Bering Sea trawl fisheries.

The traditional fishing grounds of the Japanese trawl fishery are in the East China Sea. However, the steadily declining catch in that area (catch of 17,600 tons in 1958 was 2 percent less than in the previous year and 45 percent less than in 1953) and the unstable operational conditions of that fishery prompted one of the large Japanese companies to send two of its 500-ton trawlers off northwest Australia and one 1,000-ton trawler to West Africa in 1959. The initial withdrawal of these Japanese trawlers from the East China Sea and their subsequent redeployment elsewhere marks the beginning of Japan's present overseas trawl operations.

Japan's trawl fleet is presently fishing in the waters off northwest Australia, west of New Zealand, and off West Africa, as well as in the Bering Sea. A large Japanese fishing company, in anticipation of concentrations of Japanese trawlers off West Africa, portending the likelihood of a glut of sea bream occurring in Japan, is trying to develop a new market for sea bream in Europe and Africa. Between December 1960 and June 1961, the firm exported 1,000 metric tons of sea bream to Europe through an Italian agent at $200 a ton. During the latter half of 1961, the same firm plans to export an additional 2,000-3,000 tons to Europe.

Sea bream brings about $275 per ton in Japan but it costs about $60 to $65 per ton to ship to Japan. Thus, the export price to Europe of $200 a ton is considered attractive, although the Japanese firm's officials claim that the Europeans and Africans will have to be "educated" to eat sea bream.

Another Japanese fishing company is constructing a sistership to its Amagi Maru, 2,250 gross tons, called the Ibuki Maru, 2,500 gross tons. This stern trawler was expected to be completed in September and was to be sent to West Africa. In addition, the same firm is planning to undertake the construction of 4 more large stern trawlers, of which 3 are

Japan (Contd.):

expected to be completed by the summer of 1962, and the fourth in late 1962, bringing the firm's distant-water trawl fleet to a total of six vessels. Of the six, it appears that the firm will dispatch five trawlers to the Atlantic Ocean. The same firm also is said to be considering constructing a cold-storage plant at Las Palmas, Canary Islands, to handle the catch of its Atlantic trawl fleet. As of July 1961, the company was landing sea bream at Ghana and was planning on utilizing the existing cold storage plant in Tema, Ghana. If cold storage facilities at Las Palmas or at Tema are not adequate, as a result of the expansion which the firm is planning, the company may build a 2,000-ton capacity cold-storage plant at Tema, although negotiations on this matter had not been started with the Ghanian Government as of mid-1961.

A third Japanese fishing firm operated the stern trawler No. 50 Akebono Maru, 1,470 gross tons, in the Bering Sea this year and has constructed the No. 51 Akebono Maru (date of completion--August 31, 1961), which will be dispatched to the Bering Sea. The same firm is planning to construct two additional stern trawlers, and upon their completion in spring 1962 they will be sent to West Africa and to the Bering Sea.

Other Japanese fishing firms are reported planning to operate in the Atlantic trawl fishery in 1962, but no information is available concerning their plans. (Information in this article excerpted from translations of several articles which appeared in a number of Japanese periodicals in March-July 1961.)

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STUDY OF FOREIGN FISHING ENTERPRISES:

The Japanese Fishery Agency has made a study on the status of Japanese overseas fishing enterprises. About half of the overseas fishing ventures engaged in by Japan (which reportedly total about 80) are small-scale short-term enterprises. Many are reported to have failed, while others have failed even before plans could be carried out. But it is reported that the number of the enterprises is increasing yearly.

The Fishery Agency hopes to bring the Japanese overseas fishing enterprise picture up to date and has requested the prefectural governments to conduct the survey within their prefectures, and to include in the study a review of the measures adopted in establishing overseas enterprises. (Translated from the Japanese periodical Suisan Tsushin, July 24, 1961.)

Editor's Note: According to information from previous news releases in Japanese periodicals, Japan does not appear to have any fixed policy concerning the establishment of foreign fishing bases. The determination of whether or not a foreign base should be established appears to have been made on the merits of each individual case. Most of the earlier fishing bases established in foreign countries have been for the purpose of catching tuna, but this picture has changed considerably of late and become more complex, with many more overseas bases being established. Many of the new enterprises being established in foreign countries by Japan are for catching species other than tuna, e.g., shrimp and bottomfish.

Japan now appears to be planning a basic policy concerning the establishment of foreign bases so that a "race" for overseas bases and new markets would be eliminated and the impact that such overseas bases would have on Japan, as well as the country in which they are being established, and on market conditions in general would be taken into account.

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NEW FISH SAUSAGE PLANT TO BE CONSTRUCTED:

A Japanese fishing company plans to construct a fish sausage-ham plant with a daily productive capacity of 200,000 pieces of fish sausages at Ishinomaki, Miyagi Prefecture. Construction was to begin in August 1961 and the plant is scheduled to be completed in March 1962. Total construction cost is estimated at 200 million yen or US$500,000. (Translated from Japanese periodical Shin Suisan Shimbun Sokuho, July 21, 1961.)

Translator's Note: Fish sausage has proven to be a popular food item in Japan and all the major Japanese fishing companies are expanding their operations in this field. The company building the new plant, for example, is presently known to operate four fish sausage plants with a total productive capacity of 700,000 fish sausages a day. Another large fishing company's production of fish sausages totals 1.6 million sausages a day; another produces 350,000 pieces a day. The combined 1960 production of fish sausages and fish hams

Japan (Contd.):

totaled 85,442 metric tons. This represents about a fivefold increase in production of those products over a five-year span.

The increasing growth of the fish sausage-ham industry means that the demand for tuna will continue to increase, for tuna is an important ingredient of fish sausage. According to news reports, big-eyed tuna appears to be used extensively. To meet demand, fish sausage producers have for some time been requesting that more of the tuna caught by the tuna motherships, the quota for which was increased this year, be made available to them.

Liberia

AGREEMENT REACHED WITH TAIWAN FOR JOINT TUNA FISHERY OFF WEST AFRICA:

An agreement was signed this summer between Liberia and Taiwan on agriculture and fisheries technical aid and development for Liberia. The part dealing with fisheries calls for a joint undertaking of tuna long-line fishing off West Africa for which the Taiwan Government plans to send technicians to Liberia. Tuna fishing carried on jointly by the two countries is expected to be based at Monrovia, Liberia, according to a report from Taiwan (Formosa). (From a translation of a news item in the Japanese periodical Suisan Tsushin, August 4, 1961.)

Malaya

CANNED TUNA PACKING:

The joint Japanese-Malaya fishery products company in Penang, Malaya, is using tuna from the Indian Ocean in its canned tuna pack. On July 26, 1961, an official of the firm pointed out that three types of tuna are caught in the Indian Ocean: albacore or white-meat tuna; and yellowfin and big-eyed, both of which are called light-meat tuna. In addition a number of spearfish, including swordfish, are caught, but there has been no demand for their meat on the local market, and they are not canned.

The tuna canned by the company is packed in cottonseed oil or soybean oil. A small quantity for the Danish market has been packed in tomato sauce. The size used is the 7-ounce can. About 7,000 cases (48 7-oz. cans) per month are packed.

Until recently most of the canned tuna was shipped to West Germany, with smaller quantities to Denmark, Holland, Belgium, and the United Kingdom. However, in July Canada received a shipment. The official of the firm added that there is still no market for tuna in Malaya. (United States Consulate, Penang, report of July 27, 1961.)

Mexico

CRAB MEAT INDUSTRY:

Blue crabs are found on both coasts of Mexico. Commercial utilization, however, is limited almost entirely to the east coast area between Tampico, Tamaulipas, and Alvarado, Veracruz.

The records of the Mexican Bureau of Fisheries and Allied Industries group crab meat along with other shellfish meats. It is believed, nevertheless, that most of the poundage in that classification is crab meat. The Mexican records show 250.1 metric tons of shellfish meats produced in 1959 and 402.9 tons in 1960. In addition there were 556.2 tons of whole blue crabs landed in 1959 and 691.0 tons in 1960.

It is believed that crab and crab meat production in Mexico could be increased appreciably provided a ready market were available and the smaller sizes utilizable. The east coast probably is not producing near capacity and the west coast, particularly in the States of Sonora, Sinaloa, and Nayarit, has hardly been touched. The blue crabs of the west coast generally have been considerably smaller in size than those of the east coast. The smaller size of those crabs undoubtedly has contributed to their non-use. The blue crabs from Laguna Madre and the Tampico-Laguna Tamiahua areas are said to be the largest in Mexico. Those from the Veracruz-Alvarado region are reported to be somewhat smaller.

With the interest now being shown at Tampico in crab meat production for export, it is probable that exports of this product will continue to increase. Mexican export data give exports of blue crab as fresh, iced or frozen and they do not indicate whether the product is whole or whether it is meat. Local sources state that almost all, if not all, of Mexican blue crab (jaiba) exports are in the form of crab meat. The stone crab (cangrejo moro) is the only form normally exported with the shell on. Stone crab exports are listed under miscellaneous shellfish.

Mexican blue crab exports (all to the United States) were 1.8 metric tons in 1959 and 7.9 tons in 1960. All of this is reported to come from the Tampico area and most of it probably arrives at the United States border aboard trucks.

Most of the Mexican crab meat production is sold in Mexico City. For this local consumption no separation is made of claw, lump, and body meat. All are mixed together with a rather large proportion of shell. The fastidious end user must re-pick the meat before use.

This meat (unre-picked) is sold by the primary wholesaler in Mexico City at prices varying between 8.50 and 9.00 pesos per kilo (about 30.9 and 32.7 U. S. cents per pound.) It is reported that the f.o.b. cost Mexico City to the primary whole-

Mexico (Contd.):

saler runs between 6.50 and 7.00 pesos per kilo (about 23.6 and 25.4 cents per pound).

Costs for crab meat suitable for the markets in the United States should run somewhat higher than the above since more care in the picking and cleaning is required.

Blue crabs and their meats are subject to both severance and export taxes. The current severance tax on crab meat is 10 centavos a kilo and the export duty is 20.4 centavos (about 0.4 and 0.7 cents per pound, respectively).

The severance tax on whole blue crab taken from fresh water is 2 centavos per kilo and 4 centavos from salt water (about 0.07 and 0.15 cents per pound). Export duties on whole blue crabs are the same as for the crab meat (about 0.7 cents per pound)--Information supplied on July 25, 1961, by United States Embassy, Mexico City.

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ENSENADA FISHERIES TRENDS, APRIL-JUNE 1961:

During June 1961, hopes for increased landings of fish and shellfish in the Ensenada area of Mexico's west coast were raised with reports of better fishing in nearby waters. Over 12,000 pounds of shrimp were reported taken from the waters of Magdalena Bay in the Territory of Baja California. Reports on abalone landings were not available as of the end of June.

The Fisheries Office in Ensenada reported that it is losing revenue due to the recent practice of tuna fishermen in using "deep-net" methods for fishing beyond Mexican territorial waters.

Final figures released on the 1960/61 spiny lobster fishing season show a total of 1,545,966 pounds landed at Ensenada. Government revenue from the catch amounted to 211,359 pesos (about US$17,000), according to a United States consular dispatch from Tijuana dated July 5, 1961.

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EX-VESSEL PRICES FOR SHRIMP UP SHARPLY IN AUGUST:

Light shrimp landings on the Texas coast and another price war at Mexican Gulf Coast ports of Carmen and Campeche resulted in a sharp increase in Mexican ex-vessel shrimp prices between late July and mid-August 1961. Ex-vessel prices at Salina Cruz, which had been steady for some time, jumped 4 to 10 U. S. cents a pound on August 21, 1961. July-August landings in the Carmen-Campeche area and at Salina Cruz were reported light.

Table 1 - Ex-Vessel Shrimp Prices at Mexican Gulf Coast Ports of Carmen and Campeche, July 26-August 18, 1961

Count Per Pound	August		July	
	18	5	28	26
	(All Species in U. S. Cents Per Pound)			
10/14	74	70	66	64
15/20	68	65	62	57
21/25	62	59	57	52
26/30	57	54	52	47
31/35	51	49	47	42
36/40	45	44	42	37
41/50	39	39	37	32
51/65	34	34	32	27
66 and over	20	17	15	15

The closed season along the Pacific northwest coast, which is Mexico's greatest shrimp producing area, was lifted in the bays and interior waters on August 25. Trawling in outside waters in that area was expected to start again on September 15. (Reported by United States Embassy, Mexico, August 22, 1961.)

Table 2 - Ex-Vessel Brown Shrimp1/ Prices at Mexican West Coast Port of Salina Cruz, August 18 & 21, 1961

Count Per Pound	August	
	21	18
	(U. S. Cents Per Pound)	
U/12	60	51
U/16	60	51
16/20	56	51
21/25	52	43
26/30	45	37
31/40	37	31
41/50	30	26
51/60	26	16

1/ White shrimp at Salina Cruz sold 2 U. S. cents a pound more than browns for 16/20 count and larger.

Morocco

CANNED FISH EXPORTS:

Morocco's canned fish exports for the packing season June 1960-July 1961 amounted to 2,331,451 cases. Of the total, 1,984,572 cases were sardines, 130,988 cases tuna, and 215,891 cases other types of canned fish. The 1960/61 exports were substantially higher than the 1959/60 season exports of 2,066,569 cases, of which 1,674,082 cases were sardines. (From a July 27, 1961, report of the United States Embassy, Rabat.)

Norway

AFFECT OF EEC ON FISHERIES DISCUSSED BY FISHERIES MINISTER:

The Norwegian Fisheries Minister stated late in August 1961 that a European market arrangement based on the Treaty of Rome would affect Norwegian fisheries regardless of whether or not Norway joins the six nation European Economic Community (EEC). Addressing the national convention of the Norwegian Fishermen's Federation, he stated that Norway in the near future would have to choose between three alternatives: (1) seek negotiations with a view to full membership in EEC; (2) apply for a looser connection as an associate member; or (3) not to engage in any negotiations at all. When all necessary studies have been completed, he said, the Government will submit its recommendations to the new Parliament, due to be elected September 11, 1961.

The Fishermen's convention unanimously adopted a resolution expressing deep concern about a possible Norwegian connection with EEC. A question of primary concern is the right of establishment provided in the Rome Treaty, and also the right of foreigners to fish inside Norway's fishery zone.

In his address to the convention, the Fisheries Minister observed that about 50 percent of Norway's total exports of fish and fish products now goes to Western Europe. This amounts to some Kr. 450 million (US$62,762,000) annually in foreign exchange earnings. If Norway decides to stay out of a market arrangement based on the Rome Treaty, he said, it will have grave consequences for the nation's fish exports. Thus, under the new joint external tariffs, which EEC has decided to put into effect, West Germany will raise the import duty on frozen fish fillets from 5 to 18 percent, while the duty in Belgium, Netherlands, and Luxembourg will go up from 0 to 18 percent. (News of Norway, August 31, 1961.)

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FISHERY AND WHALING TRENDS, FIRST HALF 1961:

Herring Fishery: In addition to the adverse effects on production and the balance of payments, Norway's virtually complete failure of the 1961 winter herring season has been a serious blow to the fishermen and to the 70-odd herring reduction plants along the west coast. The steady decline of winter herring catches (94 percent in the past five years) tends to confirm the predictions of the fisheries research experts that this vital fishery, which once accounted for the bulk of the fish catch, is nearing the end of a cycle and that within a few years the herring may disappear entirely from the Norwegian coast for a decade or two.

A Government commission established one year ago to investigate the entire matter has recently submitted a report on its findings and recommendations. The commission recommended, among other things, that the herring fishermen continue to receive state aid, that 5 million kroner (US$700,000) be made available for loans to the fishermen, and that a state agency be set up to help direct the herring fishermen into other fisheries.

Whaling Factoryship Sold to Japan: A Norwegian shipowner has sold the whale factoryship Kosmos III to Japanese interests together with the five whale-catching boats and the appurtenant catching rights amounting to 700 blue-whale units (from Norway's Antarctic catch quota for 1961/62) for Kr. 55.5 million (almost US$7.8 million). Included in the agreement was 12.5 percent of the Norwegian catch quota for seasons subsequent to 1961/62. The Norwegian Government approved the sale only on the condition that the sale not be considered a precedent for the sale of other factoryships to foreign purchasers. The owner of the Kosmos III has agreed to compensate any other Norwegian whaling companies which cease Antarctic operations. The Japanese have renamed the factoryship, Nisshin Maru No. 3.

Permission for the sale, granted by the Government upon advice from the Norwegian Whaling Council, required dispensation from the Whaling Law, which forbids the transfer of Norwegian whaling vessels to alien citizens or companies.

The reason for the sale is the decreasing return of the Kosmos III over the past several years. In 1960 and 1961 the expedition produced only about half the whale oil it did in 1957. Kosmos IV, also owned by a company controlled by the same shipowner, has produced even less. It was recently announced that the factoryships Pelagos and Thorshammer will not participate in the next whaling season and that the company owning the Kosmos III will compensate the owners of those two ships with the payment of Kr. 7.5 million (a little over $1.0 million) to each owner.

Norway (Contd.):

In a radio address following the sale, the owner of Kosmos III declared that the future prospects for Norwegian whaling appear dim. He alluded to diminishing whale stocks, the decreasing price of whale oil, and the rapid expansion of the whaling fleets of two nations. He charged that the international whaling regulations with respect to duration of the season and the type of whales that may be taken are being violated because of inadequate international control, and asserted that this had placed the Norwegian expeditions at a disadvantage. Finally he said that he doubted there would ever be really effective international control of whaling.

The sale reduced Norway's fleet of factoryships for Antarctic whaling to 7 and increased Japan's fleet to 8. Other countries that operate during the Antarctic season, together with the number of factoryships each employs, are: the U. S. S. R., 3; the United Kingdom, 2; and the Netherlands, 1. Two Norwegian factoryships will probably be scrapped in the next several years, and their catch quotas will be redistributed among Norway's remaining ships. (Excerpts from United States Embassy, Oslo, reports of July 21 and August 1, 1961; News of Norway, August 17, 1961; Foreign Crops and Markets, U. S. Department of Agriculture, August 28, 1961.)

Pakistan

NEW SHRIMP TRAWLER PURCHASED FROM MEXICAN SHIPYARD:

In late July 1961, a 65-foot shrimp trawler was about ready to be launched from a shipyard in Mazatlan on Mexico's west coast for the Government of Pakistan. The new vessel is a conventional shrimp trawler equipped with a Diesel engine. It is reported that if arrangements can be made, the Government of Pakistan may order additional shrimp trawlers from Mexican shipyards, the United States Embassy in Mexico City reported on July 26, 1961.

Peru

FISHERIES TRENDS, SECOND QUARTER 1961:

In the second quarter of 1961 the orderly marketing of fish meal continued to be effective under guidance of the Consorcio Pesquero del Peru, S.A. (Consortium). Due to the efforts of

Table 1 - Peru's Principal Fishery Products Exports, First Quarter 1959-61

Products	Quantity			F.o.b. Value					
	January-March			January-March					
	1961	1960	1959	1961		1960		1959	
	(Metric Tons)			Soles 1 Million	US$ 1,000	Soles 1 Million	US$ 1,000	Soles 1 Million	US$ 1,000
Frozen Fish:									
Skipjack tuna	947	1,650	930	2.3	86	4.7	170	2.9	110
Other tuna	222	2,396	2,976	0.6	22	7.0	253	9.0	341
Swordfish	66	4	32	0.8	30	0.05	2	0.4	15
Shrimp ("Langostinos")	47	40	13	1.1	41	1.0	36	0.3	11
Total Frozen Fish	1,282	4,090	3,951	4.8	179	12.7	461	12.6	477
Canned Fish:									
Bonito	4,000	4,166	3,540	42.1	1,571	40.8	1,473	34.7	1,314
Tuna	453	110	241	4.2	157	1.0	36	2.1	80
Total Canned Fish	4,453	4,276	3,781	46.3	1,728	41.8	1,509	36.8	1,394
Fish Byproducts:									
Fish meal	160,677	148,091	51,058	260.1	9,705	360.2	13,004	156.7	5,936
Sperm oil	905	4,808	3,749	5.0	1,795	15.9	574	12.7	481
Fish oil	17,162	4,903	1,301	48.1	187	13.7	495	3.4	129
Whale meal	2,036	308	998	2.9	108	0.5	18	3.1	117
Total Byproducts	180,780	158,110	57,106	316.1	11,795	390.3	14,091	175.9	6,663
Total Fishery Exports	186,515	166,476	64,838	367.2	13,702	444.8	16,061	225.3	8,534

Note: Average rate for U.S. dollar exchange certificates was 26.80 soles in the first quarter of 1961; 27.70 soles in the same period of 1960; and 26.40 soles in the first quarter of 1959.

Peru (Contd.):

the Consortium and the stronger world market for fish meal, prices were maintained at a fair level. Data published by the Consortium show a price of $102 per metric ton (US$92.53 a short ton) c.& f. European markets at the beginning of the April 1961 quarter. Later in the quarter prices increased to $121 a metric ton ($109.77 a short ton) and to $125 a metric ton ($113.40 a short ton), and reached $128 a metric ton ($116.12 a short ton) about mid-May. They remained at that level until the end of June.

Records of export shipments maintained by the Peruvian National Fisheries Society show a total of 310,088 metric tons as having been exported during the first five months of 1961. Some 82 percent of that went to five countries: Holland (29 percent), Germany (23 percent), the United States (17 percent), England (8 percent), and Japan (5 percent). The 5-months

Table 2 - Fish Meal Export Prices f.o.b. Peruvian Ports 65 Percent Protein for Future or Spot Delivery

	1961	1960
Month:	.....(US$/Short Ton).....	
June	96.16	65.00
May	76.49	75.00
April	77.78	80.00
Average April-June	83.48	73.33

rate of export appears to be well within the quota for the first half of 1961 (340,000 tons) with which the industry was in accord, following the establishment of an export quota for Peru of 600,000 tons at the Paris meeting of fish meal producers in October 1960.

However, although official data are lacking, members of the fish meal industry have indicated that Peruvian fish meal producers, up to early August, had already sold, for delivery during 1961, more than the annual quota of 600,000 tons, and that the total production for the year will reach 800,000 tons. These members anticipate a 1962 Peruvian production of more than 1 million tons. It is reported that several new fish meal plants are being built, although no record of the issuance of the required Governmental permit for this activity has been published in the official newspaper. Fishing vessels continue to be launched from the numerous shipyards along the Peruvian Coast at the rate of about one per week. Many of them are 65-foot steel-hulled vessels.

There are other factors in the existing situation in the Peruvian industry which suggest that fish meal prices may not remain at their present level. Some observers believe that the European market is weakening and that resistance to the high prices for Peruvian fish meal is growing stronger there. It has been reported that there was about 140,000 tons of fish meal in stock in Peru for future delivery as of the end of July, which points to one of the problems the Consortium faces, that is, the maintenance of prices in the face of bank pressure upon producers for the liquidation of loans.

There has been no indication of any effort on the part of the Government of Peru or the industry itself to control its growth or to take the restraining action necessary to prevent a recurrence of the 1960 slump in the market for fish meal.

Total exports of fishery products in the first quarter 1961 were up 12 percent in quantity, but down about 15 percent in value compared with the first quarter of last year, reflecting the lower prices of fish meal and the substantial drop in exports of frozen fish (about 68 percent reduction in volume; 62 percent in value). The tonnage of fish meal exports in the January-March 1961 quarter increased by 8.5 percent, but the value was down 25.4 percent as compared with a similar period in 1960. Exports of fish oil in the first quarter of this year rose sharply (259 percent) from the same quarter of 1960 and were almost 13 times the exports for the January-March quarter of 1959. (Reported August 3, 1961, by United States Embassy, Lima.)

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FISH MEAL PRICES AND SALES, JUNE 16-30, 1961:

The following fish meal prices and sales in the European and United States markets were included in the June 30, 1961, issue of the Boletin Informativo, published by the Consorcio Pesquero del Peru S. A. (Consortium).

From June 16-30, 1961, the Consortium received 25 firm orders for fish meal, of which 13 for 3,575 metric tons were approved for shipment as follows: June 200 tons; July 125 tons; August 600 tons; September 450 tons; October 700 tons;

Table 1 - Peruvian Anchovy Fish Meal Prices, June 16-30, 1961

Period and Destination	Unit	Price Range in US$			
		Opening	Highest	Lowest	Closing
Flat Market Prices 1/:					
European Shipments:					
June 16-30	short ton c.&f.	116.12	116.12	116.12	116.12
" " "	" " f.o.b. 2/	97.07	97.07	97.07	97.07
May 16-June 15	" " c.&f.	113.40	121.56	109.77	116.12
" " " "	" " f.o.b. 2/	94.35	102.51	90.72	97.07
Protein Market Prices 3/:					
European Shipments:					
June 16-30	protein unit c.&f.	1.751	1.751	1.751	1.751
" " "	short ton c.&f.	113.82	113.82	113.82	113.82
" " "	" " f.o.b.2/	94.77	94.77	94.77	94.77
May 16-June 15	protein unit c.&f.	1.669	1.751	1.669	1.751
" " " "	short ton c.&f.	108.49	113.82	108.49	113.82
" " " "	short ton f.o.b. 2/	89.44	94.77	89.44	94.77

1/"Flat" market is for sales made with a guaranteed minimum of protein (usually 65 percent). Any excess of protein is to the buyer's advantage. The most important flat markets for Peruvian fish meal are the east coast of the United States and West Germany.

2/The Boletin Informativo showed prices in metric tons c.&f.; f.o.b. prices were calculated by subtracting US$19.05 a short ton (equal to $21.00 a metric ton) for cost of freight to Europe, $26.31 a short ton (equal to $29.00 a metric ton) for freight to the United States west coast, and $20.41 a short ton (equal to $22.50 a metric ton) for freight to U. S. Gulf of Mexico ports. Prices per unit converted to prices per short ton on basis of 65 percent protein meal.

3/"Protein" market is based on the price per unit of protein and buyers must pay for any excess protein found by laboratory analysis of shipments on arrival.

Peru (Contd.):

November 750 tons; and December 750 tons. Except for 25 tons for Colombia, all sales during the June 16-30 period were to the European market. No sales were made to the United States. Sales for the flat market amounted to 3,075 tons (includes 900 tons of bonito meal), and 500 tons were for the protein-unit market.

Sales of bonito meal to the European market were made at $117.50 a metric ton c.&f. ($106.60 a short ton) or $87.55 a short ton f.o.b.

Portugal

FISHERY TRENDS, JANUARY-JUNE 1961:

Portuguese exports of canned fish (including sardines, anchovies, and tuna) increased from 21,570 metric tons in January-June 1960 to 23,173 tons in the same months this year. The value increased from 341 million escudos (US$1.2 million) in 1960 to 413.3 million escudos ($1.4 million) in 1961.

Early July reports from the cod fleet off the Newfoundland Banks were good and it was reported that some trawlers planned to make two trips. The vessels were moving from the Banks to areas off Greenland to complete their cargoes.

Early July reports from Oporto indicated that the catch of the Matosinhos sardine fleet, which began its fishing season on April 16, had been poor.

Pack data for the first quarter of 1961 show that the output of canned sardines, tuna, and anchovies was below last year's first quarter pack, although there were sufficient stocks on hand to enable shippers to increase their exports during the first five months of 1961 over last year's first five months. Sales to the United States in 1961 of canned fish (including anchovies) showed an increase over 1960 for the same period.

The typical feeling in the industry was the view expressed recently in the Jornal do Comercio of Lisbon that with the reduction of tariffs within the European Common Market (EEC), Portuguese canned fish sales to the EEC would doubtless decline. It also noted that a recent Cairo meeting of African States had recommended a boycott of Portuguese products, which might also prove serious since 12 percent of Portuguese canned fish exports are sold in Africa. (United States Embassy, Lisbon, report of July 17, 1961.)

Note: Values converted at rate of 28.90 escudos equal US$1 in 1961 and 28.80 escudos equal US$1 in 1960.

Senegal

TERRITORIAL WATERS AND FISHING RIGHTS DEFINED:

Two laws concerning Senegal's territorial waters were published by the Senegalese Journal Official of July 10, 1961. The first, Law No. 61-46 of June 21, 1961, is concerned with fishing rights within Senegalese territorial waters, and the second, Law No. 61-51 of June 21, 1961, delimits territorial waters.

Only Senegalese fishermen may fish within the territorial waters unless a convention agreed to by Senegal has recognized the right of others to do so. Any violators will face the possibility of seizure of vessel and catch, and fines totaling between 180,000 and 1,800,000 francs C.F.A. (about US$729-$7,293) may be levied against them.

Senegal's territorial waters are defined as extending six nautical miles from a point reached by the lowest ebb tide. An additional six nautical miles are considered "a contiguous zone."

Senegal also reserves all underwater subterranean exploitation rights on the continental shelf, which is defined as lying between the point reached by the lowest ebb tide and the line of depth of 200 meters (109.33 fathoms), according to an August 3, 1961, report from the United States Embassy, Dakar.

Notes: (1) Six nautical miles or "six milles marins" a French nautical mile (about 6,031.3 feet) is defined as 0.992 British nautical mile (about 6,080 feet).
(2) 246.8 C.F.A. francs equal US$1.

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TUNA INDUSTRY:

The importance of the tuna industry in Senegal has been steadily increasing (see table). The tuna is mostly yellowfin. Dakar is the center of the tuna industry.

The 1960/61 season was disappointing due to a shortage of tuna, probably explained by Dakar's vulnerable location at the upper limit of the tuna fishing areas off West Africa. The catch target was 13,500 tons. It had

Senegal (Contd.):

Landings and Utilization of Tuna at Dakar, Season 1955/56-1960/61

Season	Total Landings	Processed Locally	Shipped Frozen to France
	(Metric Tons)		
1960/61	7,500	7,500	-
1959/60	11,500	6,500	5,000
1958/59	7,500	4,500	3,000
1957/58	10,000	1,500	8,500
1956/57	8,000	1,000	7,000
1955/56	770	120	650

been agreed at the beginning of the season that France would take 10,000 metric tons of canned tuna, while 3,500 tons of canned tuna would be sold outside the franc zone. France in addition was to take 5,000 metric tons of frozen tuna, and an additional 5,000 tons of frozen was to be exported to countries other than France.

The tuna season lasts from December to May. Vessels from the French fleet (as many as 94 in number from ports of Brittany and southwest France), have landed most of the catch, but Spanish fishermen have occasionally participated. These vessels are small, and the catch is put on ice until its transfer to the refrigeration plant at Dakar or to the canning plant. In addition, several tuna clippers with freezing facilities have landed or taken for transshipment frozen tuna to France. The latter vessels are of French registry, except for two which are of Senegalese registry. Contracts for frozen tuna also have been made with Italian and United States interests.

Seven tuna canning plants, owned by French fishing interests, are found on the Cap Vert peninsula in the vicinity of Dakar. Working 200 8-hour days a year, the plants would be able to process 30,000 metric tons of raw tuna. A study has been made for the construction of a "California-type" cannery capable of handling 50,000 tons of tuna a year with possible financing by the European Economic Community Development Fund. (From a United States Embassy, Dakar, despatch dated July 6, 1961.)

Dakar is located at the north end of the tuna fishing grounds off West Africa, which roughly extend from Dakar southward. Due to cold water temperatures this year, the fishing grounds were located farther south and the tuna clippers were compelled to operate off the Gold Coast. This trip would have taken the smaller French fishing vessels, of which a large majority, have capacities of holding only about 15 tons of fish, at least 10 days one way. The smallness of the French fishing vessels is claimed to be a handicap and the consensus is that should cold-storage facilities be built at Abidjan, Ivory Coast, the importance of Dakar as a tuna fishing port may gradually diminish. (Translated from Japanese periodical Shin Suisan Shimbun Sokuho, July 18, 1961.)

Note: See Commercial Fisheries Review, May 1961 p. 61, April 1961 p. 79, January 1961 p. 79, August 1960 p. 49, and July 1960 p. 57.

Sierra Leone

TUNA INDUSTRY EXPANSION:

A large United States west coast tuna canning firm has been given a development certificate by the Sierra Leone Government to enable the firm to establish a permanent base of operation. The company proposes to utilize Freetown as its tuna receiving center for offshore fishing.

The firm proposes to build a jetty in the Kissy Dockyard area to accommodate tuna fishing vessels, to construct brine-freezing tanks for holding tuna awaiting transshipment to Puerto Rico or the United States, and to install an ice manufacturing plant for icing the tuna catchers. Work on the first two projects had already commenced as of mid-July and should be completed by the end of the year. In addition to the above facilities, the firm has indicated that it would consider building a tuna cannery provided adequate tuna were available and a satisfactory source of water is found.

In addition to the work outlined above which is estimated to cost £100,000 (US$280,000), the firm has purchased the existing cold-storage plant at Kissy.

During 1960 the amount of tuna landed in Freetown was 2,340 metric tons, whereas landings for the first five months of 1961 totaled 2,768 tons. With a facility providing for larger handling capacities, it is believed that landings will increase.

While the granting of the development certificate may not immediately result in increased employment in Sierra Leone, it will assist the local Government in generating more revenue through the use of Freetown

Sierra Leone (Contd.):

harbor. (United States Embassy, Freetown, report of July 19, 1961.)

South Africa Republic

PILCHARD-MAASBANKER FISHERY INDUSTRY, JANUARY-APRIL 1961:

The South Africa Republic Cape west coast pelagic shoal fishery catch for the first four months of the 1961 season totaled 283,610 short tons pilchards, 15,549 tons maasbanker, and 43,730 tons mackerel. The total catch was 342,889 tons. In 1960 the total catch for the same period was 235,782 tons.

The April catch was 54,982 tons pilchards, 3,669 tons maasbanker, and 31,311 tons mackerel. The total April catch was 89,962 tons. In April 1960 the catch was 55,072 tons pilchards, 9,165 tons maasbanker, and 1,301 tons mackerel.

South Africa Republic--Products Produced from Pilchard-Maasbanker Fishery Landings, January-April 1961

Fish Meal	Fish Oil	Pilchards	Canned Maasbanker	Mackerel
Short Tons	1,000 Imp. Gals.	.....	(1,000 Lbs.)	.....
71,260	6,499	16,589	3,996	13,272

The April catch this year yielded 19,056 tons fish meal, 2,011,032 gallons fish body oil, 2,920,159 pounds canned pilchards, 781,296 pounds canned maasbanker, and 5,609,472 pounds canned mackerel. (From The South African Shipping News and Fishing Industry Review, June 1961.)

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TUNA INDUSTRY DEVELOPMENTS:

Some new developments have occurred within the South African fishing industry with regard to the development of tuna fishing on a commercial basis.

The most active group in this respect continues to be a combine of several large firms. This joint venture has to date shipped 200 tons of frozen tuna; 20 tons were exported to the United States in 10-ton lots on February 28 and March 28, 1961. The remaining 180 tons went to Italy, where it had a good reception.

The broker for the shipments does not now foresee further shipments to the United States, principally because the United States buyer only pays for the usable portion of the fish. But it is possible that future consignments of albacore tuna may be sent to the United States; there have been indications that the South Africans may be able to obtain $350 per short ton for albacore, f.o.b. U. S. cannery, with the buyer permitted to reject the unusable portion.

On the Italian market the South Africans are able to get £105 (US$294) per metric ton, c.i.f., on the basis of landed weight, for all species of tuna without differentiation. As the percentage rejected by the United States buyer is estimated to average about 5 percent and the ocean freight rate per long ton to Genoa on the last shipment was R45 ($63) as compared to $79 to the United States, the Italian price is considerably higher than that now prevailing in the United States for species other than albacore.

The South African combine has raised its sights considerably since the early reports and is now thinking in terms of an annual catch of 12,500 to 15,000 short tons of tuna. This, it is hoped, will be accomplished by using 30-40 privately-owned pilchard boats equipped with long-line gear, from August to April each year. To induce the fishermen to work during their normal off-season, it is planned to set a low weekly target per boat, say 15 to 20 tons. Allowing time for repairs, bad weather, shore leave, and other delays, this fleet should still be able to land 12,000 tons without difficulty.

The group is also giving serious thought to the purchase of two tuna-clippers. These boats should have a frozen storage capacity of 150 tons each and should each be equipped with a 10-ton capacity quick-freezing plant. Between them, two such boats should be able to bring in 3,000-4,000 tons per year at the start and more as they gain experience. The group's target of 12,000-15,000 tons per year seems to be a reasonable, conservative estimate. As the 1961 pilchard season in the Republic of South Africa (formerly the Union of South Africa) closed on July 31, the implementation of the group's plan was expected within the next four months.

Meanwhile the Fisheries Development Corporation of South Africa Ltd. has convened meetings of all parties in the South African fishing industry who are currently or potentially interested in tuna. The industry has, under the Corporation's sponsorship, instituted a "Tuna Forum" for the continuous investigation of the questions involved in developing a tuna industry. The following three points have been agreed upon:

1. Those members of the inshore (i.e. pilchard) industry who wish to go ahead with experiments in long-lining, with pilchard boats, will go ahead independently.

2. One South Africa firm has made available a 65-foot trawler, which is now undergoing modifications, for experimental seining. This boat will be equipped by the firm and the Corporation; the rest of the industry is invited to staff the boat as vacancies occur.

3. The Corporation is pursuing inquiries with regard to the possibility of chartering a United States tuna vessel for up to a year, preferably one that can either long-line or net tuna.

Two schools of thought, which have existed from the beginning, are coming more into the open as the South African fishing industry gets more interested in exploiting tuna. On the one hand, the combine which has already shipped 200 tons wants to get into the business promptly but feel its way. It believes that by using otherwise unoccupied privately-owned pilchard boats it can experiment on an increasing scale without any real investment of its own. The combine's spokesman points out that there is no quick-freezing plant in Cape Town capable of handling whole tuna at present. His group has available a blast-freezing room with a capacity of 15-20 tons every 30 hours.

The Development Corporation and the firm with the trawler, on the other hand, are not at all convinced that it is possible to build up an economical operation on the basis of employing off-season boats that are designed for pilchard seining and one-day operations. Consequently they are interested in the use of larger vessels, equipped with quick-freezing plants and refrigerated storage, capable of staying at sea ten days and more, and equipped for seining. (Reported by the United States Consulate, Cape Town, on July 21, 1961.)

South and South-West Africa

PILCHARD-MAASBANKER FISHERY NEARING END OF GREATEST SEASON:

The pelagic shoal fishery of the Republic of South Africa reached the end of its 1961 season for pilchard, its mainstay, on July 31. At the end of June, the Republic's shoal fishermen had landed over 462,000 short tons of raw pilchard, maasbanker, and mackerel, as compared to just over 337,000 tons in the first half of 1960.

Table 1 - Republic of South Africa and Territory of South-West Africa Pilchard-Maasbanker Fishery Landings, January-June 1961 and 1960

Species	South Africa		South-West Africa		Total	
	Jan.-June		Jan.-June		Jan.-June	
	1961	1960	1961	1960	1961	1960
	(Short Tons)					
Pilchards	378,840	261,330	195,910	158,820	574,750	420,150
Maasbanker	39,998	47,041	14	233	40,012	47,274
Mackerel	43,647	28,828	-	-	43,647	28,828
Total	462,485	337,199	195,924	159,053	658,409	496,252

The South-West Africa pelagic shoal fishery, fishing for a quota of 375,000 short tons, had landed almost 196,000 tons by the end of June as compared to 159,000 tons by June 30, 1960.

Fish meal, fish oil, and canned fish production should also establish new records this year in both South and South-West Africa. While production will definitely set a new record, earnings for fish meal at least will not since fish meal was sold at prices lower than in 1960.

The price paid to the pelagic shoal fishermen of the South Africa Republic per short ton of raw fish landed in 1961 was set at the beginning of the year at £3 19s. 6d. (US$11.13). It was, however, also decided to pay a bonus at the end of the season based on "oil-yield."

The bonus cannot be calculated until the end of the season, but reports indicate that the very high oil yields which were obtained in the early months of the season, especially at the Cape West Coast plants, were not sustained and that, in fact, oil yields reported later in the season were lower than the customary average.

South-West African pilchard fishermen received a flat rate of 9.20 rand ($12.88) a short ton without any bonus.

Prices received for South African fish meal f.o.b. rail cars at United States port of entry are said to have ranged from $87.50 at the beginning of the year to $108 a short ton for the most recent shipments. The July 1961 United Kingdom price is given as 17 shillings ($2.38) per protein unit. South African fish meal has, this year, had a protein content running from 64.5 to 77 percent, with an average of 71.4 percent, according to the South African Fishing Industry Research Institute. The industry, however, sells on a basis of 65 percent, so that the July 1961 United Kingdom price c.i.f. British port of entry per long ton is £55 5s. ($154.70).

South African and South-West African fish body oil is almost entirely sold to the United Kindgom where the market is dominated by one large British firm. The going price is £55 ($154) per long ton (6.9 U. S. cents a pound), c.i.f. British port of entry.

Table 2 - South Africa and South-West Production of Canned Fish, Fish Meal, Fish Body Oil, and Solubles from Pilchard-Maasbanker Fisheries Landings, January-June 1961 and 1960

Product	Unit	South Africa		South-West Africa		Total	
		Jan.-June		Jan.-June		Jan.-June	
		1961	1960	1961	1960	1961	1960
Canned fish 1/	48-lb. cases	785,376	594,870	1,566,191	1,423,300	2,351,567	2,018,170
Fish meal	Short tons	103,165	73,323	38,051	28,818	141,216	102,141
Fish body oil	Long tons	37,200	23,019	10,664	8,080	47,864	31,099
Dried solubles	Short tons	711	557	1,313	1,001	2,024	1,558

1/Data are for January-May only.

While the 1961 over-all earnings of the pelagic shoal fisheries of the Republic and South-West Africa may reach a new high, owing to increased volume, the improvement in world fish meal prices will have little effect on South Africa this year. Most of the 1961 fish meal production was sold ahead at last year's lower prices. (From July 26 and 27, 1961, reports of the United States Consulate, Cape Town.)

South-West Africa

FISHING RIGHTS EXTENDED FOR TOTAL PERIOD OF 25 YEARS:

Following representations made by the fishing industry of the territory, the South-West Africa Administration has agreed to extent li-

South-West Africa (Contd.):

cense and quota rights for pilchard and spiny lobster fishing for a total period of 25 years. Previously, licenses and quota rights were renewed each year. The pilchard quota--now set at 375,000 short tons a year divided evenly among six factories--will not apparently be changed unless scientific advisors to the Administration believe that the condition of the fishery and the resource justifies it.

With this concession giving security of tenure to the factories manufacturing industrial products and canning fish, boat owners (who operate under contract to the processing companies) have also asked for some guarantee of their fishing rights. This has taken the form of a plea by the Walvis Bay Boat-Owners' Association to the Government for the 25-year licensing privilege to be extended to fishing craft. (From The South African Shipping News and Fishing Industry Review, June 1961.)

Spain

IMPORTS OF FISH OILS LIBERALIZED:

Effective September 1, 1961, Spain has liberalized the imports of fish and marine mammal oils and fats (including refined, simply irradiated, or vitamin-added). A list of liberalized import commodities published in the Official Bulletin of July 24, 1961, included fish oils. (From a July 27, 1961, report from the United States Embassy, Madrid.)

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VIGO FISHERIES TRENDS, APRIL-JUNE 1961:

Fish Exchange: Landings at the Vigo Fish Exchange for the second quarter of 1961 amounted to 17,461 metric tons, an increase of 3,538 tons over the second quarter of 1960. The value of the catch increased from 131,426,000 pesetas (US$2,190,400) in the second quarter of 1960 to 157,931,000 pesetas (US$2,632,100) in the second quarter of this year. The average price per kilo was 9.04 pesetas (6.8 U.S. cents a pound) for the second quarter of 1961 and 9.41 pesetas (7.1 U.S. cents a pound) for the same period of 1960. First quarter 1961 landings of 14,387 tons, valued at 156,191,000 pesetas (US$2,603,200) were up about 21.4 percent in quantity as compared with the second quarter of 1961.

Table 1 - Vigo Landings and Average Ex-Vessel Prices for Selected Species, April-June 1960-61

Species	April-June 1961			April-June 1960		
	Qty.	Avg. Price		Qty.	Avg. Price	
	Metric Tons	Pesetas/ Kilo	US¢/ Lb.	Metric Tons	Pesetas/ Kilo	US¢/ Lb.
Octopus	3,249	3.23	2.4	1,584	4.22	3.2
Sardines	1,411	5.20	3.9	1,482	7.07	5.3
Horse mackerel	2,391	2.71	2.0	2,457	3.56	2.7
Small hake	2,973	19.84	15.0	1,694	21.22	16.0
Pomfret	1,150	8.69	6.6	484	9.95	7.5

Albacore landings of 188 tons during the second quarter of 1961 dropped sharply from the 754 tons landed the same quarter of 1960. The albacore fleet was tied up in port several days because of bad weather when the season started in June. The albacore season is from June through September.

Table 2 - Distribution of Landings at Vigo, First and Second Quarters 1961, and Second Quarter 1960

	Shipped Fresh to Domestic Markets	Canning	Other Processing (smoking, drying, fish meal etc.)	Local Consumption
	(Metric Tons)			
1961 Qtr.				
2nd	10,948	1,302	4,440	771
1st	10,637	1,045	1,888	817
1960 Qtr.				
2nd	8,999	2,469	1,158	1,269

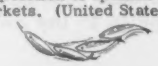
Landings of octopus in the second quarter of 1961 exceeded all other varieties. This species in the past two years has become important to the Vigo area fishing industry as export markets have been found in Argentina and the Philippines.

Fish Canning and Processing: The Vigo area fish canning industry moved into high gear during the second quarter of 1961 as sardines became available following the opening of the season on April 15. Sardine prices on the Vigo Fish Exchange dropped during the second quarter of 1961 to 5.20 pesetas per kilo (3.9 U.S. cents a pound) from the average price of 7.07 pesetas per kilo (5.3 U.S. cents a pound) in the same period of 1960. Canning of albacore, of increasing importance to the industry in recent years, was off to a slow start, with light landings and high prices--average 23.04 pesetas per kilo (17.4 U.S. cents a pound), well above the 17.41 pesetas (13.2 cents a pound) in the second quarter of 1960.

In general, the outlook for the canning industry in 1961 is not favorable. Declining consumer demand in the face of higher prices resulting from increased costs characterizes the domestic market, while exports are expected to encounter the same difficulties which restricted sales in 1960, i.e., strong Japanese competition in the important United States tuna market, relatively high raw material costs, and the lack of an aggressive well-organized export marketing outlet.

Exports of Canned Fish, 1960: According to the Conservas de Pescado covering the Northwest Zone of Spain, exports of canned fish authorized for 1960 totaled 6,303 tons with a value of US$4,484,910. (In the past, actual exports have fallen below authorizations an average of 6 percent). Comparable figures for 1959 were 7,063 tons with a value of $5,393,082. The decrease in quantity from 1959 was 10.8 percent and in value 16.8 percent. While exports of most types of canned fish increased in 1960, the increases were more than offset by the precipitous drop in canned-in-brine tuna exports, principally to the United States, from $1,120,683 in 1959 to $166,916 in 1960. Showing a substantial increase were exports of anchovies in olive oil, which approximately doubled in dollar value over 1959.

The figures bring into clearer focus the fragmentary evidence previously available which had indicated that 1960 was a difficult year for canned fish exports. Apart from the problems encountered in marketing canned albacore, exports held their own or increased somewhat. However, in a year of generally improving exports for Spanish industries, and a year of great expectations for the canning industry, the failure to consolidate the important gains made in 1959 was particularly disappointing. The figures for 1960 again emphasize the tenuous position of Spanish canned fish products in many foreign markets. (United States Consulate, Vigo, July 14, 1961.)



Sweden

FISHERMEN'S FEDERATION SEEKS SUPPORT FOR FISHERY RESEARCH:

That the need to expand fishery research in Sweden has long been a known fact, is a statement made by Sweden's Fisherman's National Federation in a communication to the Agricultural Committee of the Swedish Parliament which has before it a bill calling for an investigation directed towards advancing research activities in the fishing field.

The Federation is reported to have stressed that means for comprehensive and thorough basic research is one of the conditions for favorable further fisheries development in Sweden.

The Federation also is said to have expressed the opinion that fishery research in Sweden was not holding its own with similar activities in neighboring countries as well as in a number of branches of the domestic foodstuff industry.

Despite this general backward trend there has been some progress in late years. The Federation cited as examples: (1) the new fishery research vessel Thetis; and (2) the much needed re-equipment of the fishery research laboratory at Lysekil.

The Federation reached the conclusion that the main cause of the dilemma was the lack of sufficient financing which is reflected in both personnel and equipment. In view of this situation, the Federation was of the opinion that the proposed investigation was not necessary. Instead it is recommended that the Swedish Fisheries Board submit supply estimates and at the same time specify the tasks and purposes most important and necessary which call for an increase in funds. (United States Consul in Goteborg, August 10, 1961.)

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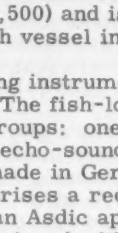
NEW FISHERY RESEARCH VESSEL COMPLETED:

The naval yard at Karlskrona, Sweden, has delivered the new 100-foot fishery research vessel Thetis to the Swedish Fisheries Board at Goteborg. The new vessel is equipped for side and stern trawling and has accommodations for 7 scientists and a 9-man crew. The vessel is provided with two laboratories, one for biological and hydrographical studies, and a smaller one for bacteriological research. Vessel cost 1.5 million crowns (US$289,500) and is the third Swedish fishery research vessel in operation.

The navigating instruments include radar and navigator. The fish-locating instruments comprise two groups: one group consists of a large writing echo-sounding device and a fishlupe, both made in Germany; and the second group comprises a recording echo-sounding device and an Asdic apparatus. In addition, the vessel is equipped with a 75-watt radio transmitter.

The first trip of the new research vessel will be to Skagerack and Kattegat to catch fish and make a hydrographical survey, with the primary emphasis on white fish, the United States Consul in Goteborg reported on July 28, and August 15, 1961.



Switzerland

FISH MEAL IMPORTS INCREASE:

Switzerland's imports of fish meal increased from 13,364 metric tons in 1958 to 15,712 tons in 1959, and to 22,187 tons in 1960--all of which was utilized as feed. (U. S. Foreign Agricultural Service Report, Bern, June 6, 1961.)

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IMPORTS OF MARINE OILS, 1960:

In 1960, Switzerland imported 1,750 metric tons of inedible marine fats and oils. West Germany was Switzerland's largest supplier of inedible fats and oils in 1960, supplying 33.1 percent of those imports. Norway was the second most important supplier, accounting for 26.1 percent of the total, followed by the United Kingdom with 19.1 percent.

Norway supplied most of the edible marine oils. (U. S. Foreign Agricultural Service Report, Bern, June 6, 1961.)

Switzerland's Imports of Edible and Inedible Marine Fats and Oils, 1960

Marine Oils	United Kingdom	Norway	West Germany	France	Iceland	Japan	Others	Total
	(Metric Tons)							
Inedible	335	457	579	113	137	50	79	1,750
Edible	18	49	-	-	-	-	-	67

Note: In addition, 20 tons of spermaceti were imported--country of origin not shown.

Taiwan

FISHERY TRENDS, SECOND QUARTER 1961:

Landings of fish and shellfish in Taiwan through June this year amounted to about 150,603 metric tons (332 million pounds)--20.9 percent above the first half of 1960.

In order to continue Taiwan's rapid increase in fisheries development, the Government has drafted a 5-year plan to take effect from 1962 which aims at an annual 8 percent increase in fish production. Such a rise would substantially increase daily per capita consumption in Taiwan and provide a small but growing surplus for export. The draft plan calls for an investment of about US$37 million, largely for construction of deep-sea vessels and for mechanization of coastal and inshore vessels.

Emphasis on expansion of the tuna fishing fleet continues. Approval has been given for the granting of International Cooperation Administration local-currency loans to help construct 15 145-ton tuna long-liners (wood hull). The mainstay of Taiwan's deep-sea tuna fleet at present consists of 10 wooden 100-ton, 5 steel 150-ton, and 4 steel 350-ton vessels. Two steel 550-ton vessels are now being constructed in Japan and should be ready by the end of this year. (From August 1, 1961, report, United States Embassy, Taipei.)

Turkey

GOVERNMENT COOPERATES IN BLUEFIN TUNA FISHERY:

The Turkish Meat and Fish Office in cooperation with a private fishery firm, operating in the Island of Marmara, plans to fish for bluefin tuna in the Sea of Marmara.

The Government Agency will supply a fishing boat and a substitute vessel and the firm will supply a new nylon bluefin tuna purse-seine net.

If this experimental venture is successful, the Meat and Fish Office intends to fish cooperatively with other fish cooperatives upon request. (Fish and Fishery, monthly periodical of the Turkish Meat and Fish Office, July-August 1961.)

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LOAN PLAN FOR FISHERMEN SET UP:

The Agriculture Bank of Turkey this summer set up procedures to distribute funds from a loan totaling 2,750,000 Turkish liras (US$305,000) obtained from the U. S. International Cooperation Administration Organization, principally for loans to fishermen.

Local branches of the Bank and fishery cooperatives have been asked to determine the requirements of each share holder. The requirements of the fishermen will be met either in cash or fishing equipment.

The Turkish Meat and Fish Office has imported a quantity of nylon yarns in the same manner as fish netting previously, for distribution to fishermen. (Fish and Fishery, monthly periodical of the Turkish Meat and Fish Office, July-August 1961.)

U.S.S.R.

FISHERY TRENDS, JULY 1961:

Fishing Activity Continues in Northwest Atlantic: During July, a number of Soviet trawlers and gill-netters continued fishing in the Georges Bank area. Frequent sightings of these and other Soviet fishing vessels--including a large Soviet stern trawler, a factoryship, and a tanker--were reported by New England fishermen.

Soviet and Japanese Fishing Fleets Active in Bering Sea: In July, Soviet and Japanese fleets observed in the Bering Sea included about 175 craft, mainly trawlers. The Soviets operated 3 large factoryship fleets consisting of about 75 craft, of which 50 were reportedly trawlers. Some of the U.S.S.R. crafts were fishing for king crab with tangle nets. The fleets were observed mainly between 175° W. longitude and Bristol Bay.

Catch Goals: The goal set in the current Soviet seven-year plan is a fishery catch of 10.2 billion pounds (4,600,000 metric

Russian factory-type stern trawler fishing on northern edge of Georges Bank. Length about 300 feet.

U. S. S. R.:

tons) by 1965 (includes whales and shell weight of shellfish). In 1961, the total Soviet fishery catch is expected to reach 8 billion pounds (3,600,000 metric tons). Of that total, 78 percent is expected to be taken in the open ocean with important increases in the catches of tuna, sardines, redfish (ocean perch), and Atlantic herring. (University of Washington Circular No. 142; Pacific Fisherman, January 25, 1961.)

Soviet Salmon Seen off Scotland: The British Trawler reports that thousands of humpback or pink salmon (Oncorhyncus gorbuscha) were observed fleeing the Barents Sea for the warmer waters around the northeast coast of Scotland. This valuable species of salmon was found mainly in the Pacific until the later 1950's when the Soviet Union began planting millions of eggs in streams flowing into the Barents Sea. (The Fishing News, June 8, 1961.)

Large Factoryship Launched: The Soviet factoryship Andrei Sakharon has recently been completed at Rostock in East Germany. Claimed to be the most advanced of its type in the world, this vessel of 15,000 displacement tons provides complete and automatic processing facilities. Equipment on board includes a device for separating small and large fish, mechanized fish cooling tanks, a new type of sardine dryer, an automatic oil extractor (also claimed to be the first in the world), an ice-making plant with a capacity of 25 tons per day, a machine for making cartons, and airconditioned crew's quarters. As of July 1961, the ship was on a two-months maiden voyage to the Red Sea and Indian Ocean. (World Fishing, July 1961.)

Types of Freezer-Trawlers: Several improved types of Soviet trawlers have been constructed in recent years. All large freezer-trawlers are known as BMRTs from the Russian term Bolschoe Moroziljnymi Rybolovnymi Trawler (large refrigerated fishing trawler); they are also referred to as Pushkin-class trawlers, the name given to the first Soviet stern trawler. Recent BMRTs--the Mayskowsky and Leskov types--constructed in Polish shipyards appear to have only minor modifications from the Pushkin, mainly improvements in fish-freezing equipment. No more freezing-in-brine systems are being installed, except for tuna fishing. Another freezer-trawler, the Nekrasov type, was built in West Germany and several other types in East German shipyards. One type of trawler is specially designed for fishing in tropical waters. (Atlantic Ocean Fisheries, London, March 1961; and Fisheries Research Institute, University of Washington, Seattle, May 1961.)

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HERRING FISHING IN ATLANTIC:

At the same time as the Faroe Islands fishermen began summer herring fishing in July in their home waters, the first Soviet Union herring trawlers appeared, according to Danish press reports. Formerly, the Soviet vessels fished the year round in the North Atlantic but now they are mostly in the Baltic Sea from April to July. The Faroe Islanders have never found the lean winter herring worth catching.

The Soviet herring vessels are as large as 300 tons with powerful engines and crews of 30-35 men. In previous years the Soviet fleet on the Faroe Islands grounds consisted of between 200 and 300 such vessels supported by motherships and supply ships up to 10,000 tons, while special tankers supplied the fleet with fresh water. (United States Embassy, Copenhagen, Fisheries Attache report dated July 28, 1961.)

United Kingdom

DOGFISH MIGRATIONS STUDIED:

Dogfish tagged and released in the English Channel in April this year by British biologists of the Lowestoft Fishery Research Laboratory have been caught in the Channel and the North Sea, one as far north as Hartlepool.

About 1,000 dogfish were marked with the object of discovering their movements, and the evidence is that the dogfish moved from a point off Eastbourne into the North Sea, though some went westwards, for two were caught off the Isle of Wight.

The fishermen's theory that dogfish follow the herring shoals is a myth in the opinion of one of the British scientists, who has examined the stomach contents of several hundred dogfish and has found that herring formed only a very small percentage of their diet. In his view the dogfish is an indiscriminate feeder, eating practically anything that comes along. He has even found portions of seal and recently he found a garfish in the stomach of a dogfish.

In the fall a further experiment is to be conducted off the Humber, where it is proposed to mark about 1,000 dogfish to try and find out how quickly they are caught. The scientists are also investigating the age at which female dogfish begin to bear young and the number of pups they bear at a time. (The Fish Trades Gazette, August 5, 1961.)

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FISHERY TRENDS, JULY 1961:

Membership in Common Market Advantageous to Fishery Exports: In response to a House of Commons query asking what consequences the accession of the United Kingdom to the European Common Market would have on the agreements which prevent British trawlers from fishing in many northern European waters, the Minister of Agriculture, Fisheries and Food replied that Common Market fisheries policies had not yet been fixed, but the Common Market imported a significant quantity of fish. From the point of view of fishery exports, therefore, it would be an ad-

United Kingdom (Contd.):

vantage for the United Kingdom to join the Common Market.

New Icelandic and Norwegian Fishing Limits Will Be Costly: The new fishing limits off Iceland and Norway will cost the United Kingdom about $16.5 million annually in lost catches, according to a statement of the Minister of Agriculture, Fisheries and Food in the House of Commons. This represents a 25 percent decline in the catch in distant waters. He doubted that more than two-thirds can be made up on other fishing grounds. (Reported on July 28, 1961, by the Fisheries Attache, United States Embassy, Copenhagen.)

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NEW TYPE STERN TRAWLER LAUNCHED:

Britain's most unconventional trawler, a near- and middle-water Diesel-electric stern type which differs in almost every particular from an ordinary trawler, was launched and named Atlantic Dolphin at Grimsby, on July 28, 1961.

The Atlantic Dolphin was built for a Milford Haven firm under the White Fish Authority's grant and loans scheme. Before authorizing the new vessel the Authority and the Ministry of Transport insisted on the most exhaustive tank trials under all possible sea conditions.

The new vessel is quite unlike conventional trawlers being reminiscent of the Fairtry factoryships on a smaller scale.

The forecastle deck is continued for three-quarters of the length of the hull. On this shelter deck is a high, curved breakwater in front of the streamlined fiber-glass wheelhouse and deckhouse. The vessel has a ramp in the transom stern but, except during hauling operations, the ramp is closed by a hinged bulwark door which when lowered forms the floor of the ramp. The fish is handled under cover, the electric winch being also completely under cover. The hatches to the refrigerated fish hold are inside the fish-handling room, though there is a hatch from the fish hold to the shelter deck for discharging purposes.

Three Diesel-electric generators, each of 400 hp., will be fitted together with a propulsion motor of 800 hp. driving the propeller through a reduction gear box. The Diesel generators are well forward of amidships where the hull has been given much fuller lines than is customary.

Accommodations for the crew of 15 (officers and men) will be well forward over the main generator room and be of a very high standard, all being two- and three-berth cabins. The skipper's quarters are in the upper deckhouse adjacent to the bridge.

Atlantic Dolphin is 130 feet long over-all with an extreme moulded breadth of 26 feet 6 inches and a moulded depth of 14 feet 4 inches.

Trawl-handling gear is being prepared to meet the specialized ideas of the trawler's owner, and is stated to be on quite different lines from anything hitherto seen in corresponding types of vessels.

Another unusual feature of the new vessel will be the electric galley. (The Fish Trades Gazette, August 5, 1961.)

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PRODUCTION AND UTILIZATION OF WHALE OIL:

Production: In the 1959/60 season (November 1959-May 1960), production of Antarctic whale oils amounted to 40,000 long tons on British factoryships, while an additional 5,000 tons came from shore stations. This compares with 38,000 tons from factoryships and 5,000 tons from shore stations in 1958/1959. In the 1960/61 season, it was estimated that British factoryship production would decline to 30,000 tons because only two fleets were operating instead of three as in previous seasons. Including shore station production, the total estimated 1960/61 season production was expected to total 35,000 tons.

Utilization: Great Britain's utilization of crude whale oil amounted to 143,000 tons in calendar year 1959; it was estimated that the same amount would be used in 1960.

The use of refined whale oil in margarine production increased from 91,000 tons in 1959 to 97,000 tons in 1960. This was due mainly to a decline in the use of groundnut and palm oil in margarine. The use of refined whale oil for compound cooking fat remained steady at 45,000 tons for both years. (U. S. Foreign

United Kingdom (Contd.):

Agricultural Service Report, London, April 14, 1961.)

Note: See Commercial Fisheries Review, Aug. 1960 p. 73.

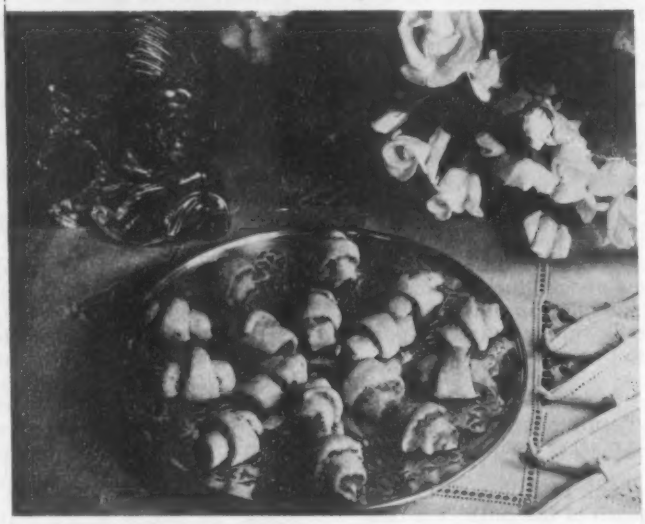
Yugoslavia

FISH OIL AND MEAL IMPORTS, 1959-1960: Yugoslavia's total imports of unrefined fish oil increased from 455 metric tons in 1959 to 517 tons in 1960. Nearly all was imported from Norway--516 tons in 1960 and 458 tons in 1959.

Imports of fish meal also increased, from 7,386 tons in 1959 to 12,639 tons in 1960. While Angola supplied 3,042 tons in 1959, none was received in 1960 from that country. Peru supplied 2,003 tons in 1959 and 3,500 in 1960. Australia shipped none in 1960 and 2,341 tons in 1959. But the South Africa Republic shipped 9,139 tons in 1960. U. S. Foreign Agricultural Service Report, Belgrade, dated July 12, 196.)

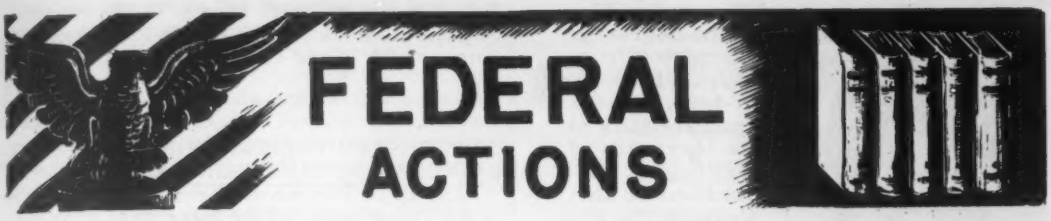
Note: See Commercial Fisheries Review, Feb. 1960 p. 92.

SMOKED SALMON ROLLS



1 can (7 ounces) smoked salmon
¼ cup mayonnaise or salad dressing
2 tablespoons lemon juice
1 teaspoon horse-radish
1 teaspoon grated onion
1 cup pastry mix
Paprika

Drain and flake salmon. Add mayonnaise, lemon juice, and seasonings; blend into a paste. Prepare pastry according to directions. Divide in half; roll very thin in a circle about 9 inches in diameter. Spread with salmon mixture. Cut into wedge-shaped pieces, and roll in jelly-roll fashion beginning at the round edge. Score top of rolls with a fork, and sprinkle with paprika. Bake in a hot oven, 425° F., for 15 to 20 minutes or until brown. Serve hot or cold. Makes approximately 32 rolls.



Department of Health, Education, and Welfare

FOOD AND DRUG ADMINISTRATION

EXTENSION OF EFFECTIVE DATE OF FOOD ADDITIVES STATUTE FOR CERTAIN SUBSTANCES USED INDIRECTLY IN FOODS:

The use in foods of certain additives as indirect additives for which tolerances have not yet been established or petitions therefor denied has been further extended under the Federal Food, Drug, and Cosmetic Act as amended. An order issued by the U. S. Food and Drug Administration and published in the August 1, 1961, Federal Register, lists about 212 components of rubber and rubber products used for food-handling equipment. Specific uses or restrictions are shown for most of the substances listed. The effective date of the statute for the substances listed is extended to July 1, 1963.

Another order, published in the August 25, 1961, Federal Register, lists about 75 substances. Specific uses or restrictions are shown for most of the substances listed.

The lists of substances for both orders are in the regulations as "Part 121--Food Additives, Subpart A, section 121.91."

Department of the Interior

GEOPHYSICAL EXPLORATION AUTHORIZED IN PACIFIC OCEAN AREA OFF OREGON AND WASHINGTON:

Approval of authorization of permits to conduct geological and geophysical exploration for oil on the Outer Continental Shelf of the Pacific Ocean off Oregon and Washington was announced on August 3, 1961, by the U. S. Department of the Interior.

Oil companies interested in exploratory work may now operate in Federal waters off Oregon and Washington upon condition: (1) that they obtain a permit from the regional oil and gas supervisor of the Department's Geological Survey, Los Angeles, Calif.; (2) that operations shall be confined to such area or areas as designated in the permit; and (3) that a stipulation is filed with the regional supervisor to comply with requirements to protect and conserve the aquatic life in the designated area.

The regional oil and gas supervisor has consulted with State authorities in Oregon and Washington and has arranged to use state inspection services for the protection of aquatic life.

Companies authorized to conduct geological and geophysical explorations are not authorized to drill exploratory wells, nor does geophysical exploratory activity confer preference in obtaining oil and gas leases.

* * * * *

FISH AND WILDLIFE SERVICE

BUREAU OF COMMERCIAL FISHERIES

THREE POSITIONS FILLED BY PROMOTIONS:

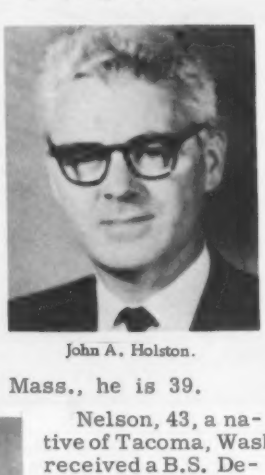
Three promotions in the Bureau of Commercial Fisheries were announced on August 5, 1961, by Assistant Secretary for Fish and Wildlife Frank P. Briggs.

Charles Butler, formerly Saltonstall-Kennedy Program coordinator, was promoted to Chief, Division of Industrial Research. John A. Holston, formerly Chief, Branch of Technology, was named Assistant Chief, Division of Industrial Research. Philip R. Nelson, Assistant Chief, Branch of Inland Fisheries in the Division of Biological Research, was made Chief of that Branch.

Butler, 53, a native of Monmouth, Ill., received a Bachelor of Science Degree in Chemistry from Monmouth College in 1929. He did graduate work at the University of Washington. He has been an employee of the Fish and Wildlife Service since 1943 when he received a War-Service appointment as assistant technologist in Seattle. He was promoted to chemist in 1944. He served in Honolulu as chief of the technology section and later was a fishery products technologist at Washington, D. C.; Boston, Mass.; and College Park, Md. Before becoming Saltonstall-Kennedy coordinator, he was Chief of the Branch of Technology in the Washington, D. C., office.

Charles Butler.

Holston, who received his B.S. Degree in Chemistry from Boston College in 1950, began employment with the Bureau in 1951 as a chemist at the Boston Office. Later, he served in Boston and then in Washington as a fishery products technologist. Since 1958, he had been Chief of the Branch of Technology. A native of Chelsea, Mass., he is 39.



John A. Holston.

Philip R. Nelson.

Nelson, 43, a native of Tacoma, Wash., received a B.S. Degree in Fisheries from the University of Washington in 1942. He began employment with the Bureau as a fishery research biologist in 1946 and served in Seattle, Wash., and Kodiak Island, Alaska, until 1957. He was then stationed in the Annapolis, Md., shellfish laboratory until March 1958, when he became Assistant Chief of the Branch of Anadromous and Inland Fisheries.

* * * * *

GLOUCESTER TECHNOLOGICAL LABORATORY DIRECTOR NAMED:

The U. S. Bureau of Commercial Fisheries of the Department of the Interior's Fish and Wildlife Service has appointed Joseph W. Slavin as Director of the Bureau's new Technological Laboratory in Gloucester, Mass.

Slavin has served as Acting Director of the Gloucester Laboratory since the transfer of former Director Samuel R. Pottinger to head the Bureau's new Technical Advisory Unit located in Boston.

A native of Boston, Slavin received a B.S. degree in Engineering from the U.S. Merchant Marine Academy in 1948. After six years in private industry, Slavin was appointed as a mechanical engineer to the Fish and Wildlife Service's Technological Laboratory, then located in East Boston. Since 1958 he has been Assistant Laboratory Director.

Department of Labor

WAGE AND HOUR AND PUBLIC CONTRACTS DIVISIONS

PUERTO RICO TUNA CANNING INDUSTRY DOES NOT FILE APPLICATION FOR MINIMUM WAGE RATE REVIEW:

On July 20, 1961, it was announced that 11 industries in Puerto Rico and 1 industry in the Virgin Islands had filed timely applications for minimum wage rate review committees under the provisions of the 1961 amendments to the Fair Labor Standards Act. But the Puerto Rico tuna-canning industry was listed as one which had not filed. The announcement was made by the Administrator of the Wage and Hour and Public Contracts Division of the U. S. Department of Labor.

The Administrator pointed out that under the amendments all minimum wage rates provided in each current industry wage order for Puerto Rico and the Virgin Islands will be automatically increased by 15 percent on November 3, 1961, or one year after the effective date of the most recent wage order in effect on November 3, 1961, whichever is

later, except where the Secretary of Labor appoints a review committee pursuant to an industry application for such review.

In all other industries in the two Islands which have not filed, the 15-percent automatic increase in minimum wage rates will become effective November 3, 1961, except in certain classifications of these industries where the one-year period from the effective date of the current wage order extends beyond November 3. Since the Puerto Rican tuna-canning industry did not file an application for a review committee, on November 3, 1961, the present minimum wage hourly rate of $1.00 will automatically be increased to $1.15. The same applies to Puerto Rican wholesaling, warehousing, and distribution industries. The current minimum wage hourly rate of 80 cents for the Puerto Rico canning and preserving industries other than tuna canning will automatically increase to 92 cents.

Department of the Treasury

BUREAU OF CUSTOMS

CLARIFICATION OF MANIFESTING AND ENTRY OF TRANSFERRED PRODUCTS OF AMERICAN FISHERIES:

Certain changes in the Customs Regulations clarify the phase "imported by the taking vessel," in section 10.79, and eliminate the requirement for entry of products of American fisheries taken on the high seas when they are shipped to the United States by being transferred at sea to another fishing vessel of the same fleet returning to port. This means a fishing vessel may transfer fishery products caught on the high seas or in the territorial waters of the United States from one United States fishing vessel to another, and the carrying vessel may return to a United States port without being held in violation of its enrolled license.

The changes indicated were published in the May 17, 1961, Federal Register as follows:

Title 19—CUSTOMS DUTIES

Chapter I—Bureau of Customs, Department of the Treasury

[T.D. 55384]

PART 10—ARTICLES CONDITIONALLY FREE, SUBJECT TO A REDUCED RATE, ETC.

Products of American Fisheries

Sections 10.78 and 10.79, Customs Regulations, relating to entry of products of American fisheries, amended.

To clarify the phrase "imported by the taking vessel," in § 10.79, and to eliminate the requirement for entry of products of American fisheries taken on the high seas when they are shipped to the United States by being transferred at sea to another fishing vessel of the same fleet returning to port, the following changes are made in the Customs Regulations:

Section 10.78(a) is amended to read as follows:

§ 10.78 Entry.

(a) Except as prescribed in § 10.79(d), no entry shall be required for fish or other marine products taken on the high seas by vessels of the United States or by residents of the United States in undocumented vessels owned in the United States when such fish or other products are brought into port by the taking vessel, or are transferred at sea to another fishing vessel of the same fleet and brought into port.

§ 10.79 [Amendment]

The first sentence of § 10.79(a) is amended to read as follows: "When products of American fisheries claimed to be free of duty under paragraph 1730 (a), Tariff Act of 1930, are imported from a foreign country or its territorial waters by the taking vessel, or are shipped, except as provided for in § 10.78 (a), to the United States by the master, owner, or agent of the taking vessel otherwise than in the taking vessel, a declaration, customs Form 3295, of the master of the taking vessel, verified by at least two members of the crew, shall be required in connection with the entry."

(R.S. 251, sec. 624, 46 Stat. 759; 19 U.S.C. 66, 1624)

[SEAL] D. B. STRUBINGER,
Acting Commissioner of Customs.

Approved: May 10, 1961.

A. GILMORE FLUES,
Assistant Secretary of the Treasury.

Note: Also see Commercial Fisheries Review, March 1961 p. 94.

Eighty-Seventh Congress

(First Session)

Public bills and resolutions which may directly or indirectly affect fisheries and allied industries are reported. Introduction, referral to committees, pertinent legislative actions, hearings, and other actions by the House and Senate, as well as

signature into law or other final disposition are covered.

CATCH TRANSFER AT SEA: On August 21, the House passed and cleared for the President S. 1222, a bill relating to documentation and inspection of vessels of the United States with amendment. The Senate had passed the bill on May 26. As passed, the bill provides that a U. S. fishing vessel which occasionally takes on board on the high seas and transports to a U. S. port without payment, the catch of another U. S. fishing vessel shall not be considered to be engaged in the transportation of freight for hire. On August 23, S. 1222 was presented to President for signature.

On August 30, the President signed S. 1222 (P. L. 87-177).

EXPORT POLICY ACT OF 1961: Promotion of United States Exports (Aug. 30, 1961 Hearings before Subcommittee No. 3 of the Committee on Banking and Currency, U. S. House of Representatives, 87th Congress, 1st Session, on H. R. 8381 to amend Export-Import Bank Act, 1945; H. R. 7102 and H. R. 7103 to create American Export Credits Guaranty Corporation; H. R. 7266 and H. R. 8249 National Export Policy Act, 1961), 159 pp., printed. Contains text of each bill, statements of various business officials, officials of Export-Import Bank of Washington, and officials representing the National Coordinating Committee for Export Credit Guarantees. Legislation would provide for a system of export credit guarantees which would become as important to the expansion of American export trade as the Federal Reserve System is to the soundness, stability, and orderly progress of our banking structure.

FEDERAL BOATING ACT OF 1958 AMENDMENTS: On August 21 the House passed and cleared for the President S. 883, extending the application of the Federal Boating Act of 1958 to certain possessions of the United States (Puerto Rico, Virgin Islands, and Guam). The Senate passed S. 883 on April 24. On August 23 it was presented to the President for signature. On August 30, the President signed S. 883 (P. L. 87-171).

FISHERY LOAN FUND MORTGAGE FORECLOSURES: On August 21 the House passed and sent to the Senate without amendments H. R. 206, facilitating administration of the fishery loan fund established by the Fish and Wildlife Act of 1956. Would give the Secretary of the Interior authority to dispose of vessels and property acquired through foreclosures under the fishery loan program.

On August 29, the Senate Committee on Commerce reported out favorably H. R. 206 without amendment (S. Rept. 826). On Sept. 1, H. R. 206 was considered and passed by the Senate without amendment and cleared for the President. On Sept. 13, the bill was signed by President (P. L. 87-219).

S. Rept. 826, Fishery Loan Fund (87th Congress, 1st Session, report from the Committee on Commerce, to accompany H. R. 206), 3 pp., printed. Committee reported bill favorably without amendment and recommended passage. Contains purpose of the bill, need for the legislation, and 2 reports from Interior Department.

FISHING VESSEL CREWS TO BE CONSIDERED EMPLOYEES: H. R. 8800 (Pelly), introduced in House August 18, a bill to amend section 2(3) of the National Labor Relations Act so as to extend the coverage of such act to members of the crews of certain fishing vessels; to the Committee on Education and Labor.

FISH FLOUR: H. R. 9101 (Pike), and H. R. 9102 (Keith), introduced in House September 7, identical bills to amend clause (3) of section 402 (a) of the Federal Food, Drug, and Cosmetic Act; to Committee on Interstate and Foreign Commerce. Amends Act in that "no processed seafood product shall be deemed to consist of any such substance or to be otherwise unfit for food because such processed seafood product is derived from whole fish, provided such product is processed under sanitary conditions and after processing is nutritious and in no manner harmful to the health of consumers thereof."

FOREIGN-FLAG VESSELS LANDING CATCHES OF FISH IN VIRGIN ISLANDS: On August 29, the Senate Committee on Commerce reported out favorably H. R. 3159, an act to permit certain foreign-flag vessels to land their catches of fish in the Virgin Islands in certain circumstances, and for other purposes, without amendment (S. Rept. 828). Passed House on August 7.

S. Rept. No. 828, Virgin Islands Fish Boats (87th Congress, 1st Session, report from the Committee on Commerce to accompany H. R. 3159), 8 pp., printed. Committee reported bill favorably, without amendment, and recommended its passage. Contains purpose of bill, need for legislation, reports of Interior Department, State Department, Treasury Department, and Comptroller General of the United States. Changes existing law, in that there shall be no prohibition of the landing by a foreign-flag vessel of not more than 50 feet over-all length in a port of the Virgin Islands of the United States for immediate consumption of its catch of fresh fish, whole or with the heads, viscera, or fins removed, but not frozen, otherwise processed, or further advanced. No fish under this authorization shall be sold or transferred except for immediate consumption. Sale or transfer to an agent, representative, or employee of a freezer or cannery shall be prohibited in the absence of satisfactory evidence that such sale or transfer is for immediate consumption.

On September 1, H. R. 3159 was considered, passed by Senate without amendment, and cleared for the President. On Sept. 13, the bill was signed by the President (P. L. 87-220).

FOREIGN TRADE: Foreign Commerce (June 21, 22, and July 11, 13, 21, and 24, 1961, Hearings before Committee on Commerce, U. S. Senate, 87th Congress, 1st Session, on S. 1729, a bill to promote the foreign commerce of the United States, and for related purposes), 217 pp., printed. Bill is designed to bring the facilities of the United States Government for aiding American businessmen in expanding their exports up to a par with the facilities offered by other governments in aiding their businessmen. Contains statements of various businessmen, government officials, associations; letters; telegrams; and agency comments from the Controller General of the United States, Department of Commerce, Department of State, Department of the Treasury, and Export-Import Bank of Washington.

FOREIGN TRADE REGULATION: H. R. 9008 (Utt), introduced in House August 31, a bill to regulate the foreign trade of the United States by providing safeguards to domestic industry against unfair and destructive imports and to authorize reciprocal trade agreements between the United States and foreign

countries; to the Committee on Ways and Means. On Sept. 7: H. R. 9063 (Cederberg), and H. R. 9065 (Knox) were introduced in the House.

IMPORT COMMODITY LABELING: H. R. 8867 (Garland), introduced in House Aug. 23, a bill to amend section 304 of the Tariff Act of 1930 to strengthen the requirement that imported articles be marked with the names of their countries of origin, so as to make certain that the ultimate users of such articles will be informed as to their origin in all possible cases; to the Committee on Ways and Means.

On September 1, the House Committee on Ways and Means reported out H. R. 7692 (H. Rept. No. 1102). Referred to Committee of the Whole House on the State of the Union.

H. Rept. 1102, Marking of New Packages for Imported Articles (Sept. 1, 1961, Report from the Committee on Ways and Means, U. S. House of Representatives to accompany H. R. 7692), 6 pp., printed. Committee reported bill favorably, with amendments, and recommends passage. Contains amendments, purpose of legislation, a general statement, and changes in existing laws.

On September 7, the House considered H. R. 7692, amended and passed it. Would make 3 substantial changes in existing law. First, it would be required that articles removed from a container be marked to show the country of origin on the repackaging: second, containers for articles for export to the United States must be marked to indicate that in the event of repackaging, such repackaging must contain the designation of the country of origin; third, there is a penalty provision for failure to comply with these marking requirements applicable in the case of repackaging.

On September 8, Senate received House-passed bill H. R. 7692; referred to Committee on Finance.

IMPORT COMPETITION ADJUSTMENT: On August 14, the Subcommittee on the Impact of Imports and Exports on American Employment, of House Committee on Education and Labor held hearings; public witnesses were heard. Hearings continued August 16.

H. R. 8875 (VanZandt), introduced in House Aug. 23, a bill to protect the domestic economy, promote the national defense, and regulate the foreign commerce of the United States by adjusting conditions of competition between domestic industries and foreign industries, and for other purposes; to Committee on Ways and Means. Similar to other bills introduced on same subject.

INSPECTION OF FISHERY PRODUCTS BY INTERIOR DEPARTMENT: H. R. 8851 (Morrison of La.), introduced in House August 22, a bill to authorize the continuation of certain inspection activities of the Secretary of the Interior; to Committee on Merchant Marine and Fisheries. Authorizes the Secretary of Interior to continue inspection of food products other than fishery products at request of a manufacturer or processor, provided the food product was under inspection by contract for a one-year period prior to August 31, 1961. S. 2499 (Long of La.) introduced in Senate on August 31, identical to H. R. 8851.

LABOR, HEALTH, EDUCATION, AND WELFARE APPROPRIATIONS: House on August 21 disagreed to Senate Amendments to H. R. 7035, fiscal 1962 appropriations for the Department of Labor, and Health, Education, and Welfare; agreed to a conference requested by the Senate, and appointed conferees. Contains funds for research grants for shellfish technology and marine ecology, shellfish sanitation; and funds in the amount of $1,820,000 for construction, equipping, staffing, and operating two shellfish laboratories, one on the East Coast and one on the Gulf Coast, to combat the danger of transmission of disease, such as hepatitis, from raw shellfish to humans.

On August 30, the Conferees met in executive session to resolve differences between the House- and Senate-passed version of H. R. 7035. No agreement was reached, and another meeting was scheduled. On September 7, the Committee of Conferences filed report on H. R. 7035 (H. Rept. 1154).

H. Rept. No. 1154, Departments of Labor, and Health, Education, and Welfare Appropriation Bill, 1962 (Sept. 7, 1961 Report from Committee of Conference, to accompany H. R. 7035), 11 pp., printed. The Committee on Conference came to agreement and presented their recommendations to their respective Houses. Contains recommendations, and statement of managers on the part of the House.

On September 11, the House adopted conference report and on September 12 the Senate adopted conference report on H. R. 7035. This cleared the bill for the President's signature.

MARINE MAMMAL HIGH SEAS PROTECTION: The House on August 21 passed H. R. 7490, for the protection of marine mammals on the high seas. Included in the bill are polar bear, sea otter, and walrus. Prohibits the take, possession, transport, sale, or purchase of the mammals indicated except as permitted by the Act or in accordance with regulations issued by the Secretary of the Interior. The bill was sent to the Senate without amendments. Read in Senate on August 22 and referred to Committee on Commerce.

NATIONAL FISHERIES CENTER AND AQUARIUM: On Aug. 23, the Committee on the District of Columbia ordered favorably reported H. R. 8181, a bill to authorize the Secretary of the Interior to construct a National Fisheries Center and Aquarium in the District of Columbia, without amendment (H. Rept. No. 1024); referred to Committee of the Whole House on the State of the Union. Passed by the House on August 28 by a record vote of 208 yeas to 135 nays.

NAVAL OCEANOGRAPHIC OFFICE: On August 15, the House Committee on Armed Services favorably reported H. R. 8045, a bill to change the name of the Hydrographic Office to U. S. Naval Oceanographic Office; without amendment (H. Rept. No. 906).

H. Rept. 906, Changing the Name of the Hydrographic Office to the Oceanographic Office (87th Congress, 1st Session, report from the Committee on Armed Services to accompany H. R. 8045), 2 pp., printed. Committee reported bill favorably without amendment, and recommended passage. Contains purpose of bill, statement, agency report from Navy Department. Legislation will not affect present personnel of this office in any way.

The House on August 21 passed and sent to the Senate without amendments H. R. 8045. Read in Senate on August 22 and referred to the Committee on Armed Services.

NORTHWEST NORTH AMERICA FISHERY INDUSTRIES: H. Doc. 176, Transport Requirements for the Growth of Northwest North America, Vol. I (May 25, 1961, Letter from the Chairman, Alaska International Rail and Highway Commission, Transmitting the Final Report of the Alaska International Rail and Highway Commission, Pursuant to Public Law 884, 84th Congress), 149 pp., printed. This report contains the conclusions and recommendations; chronology of studies, scope of economic study as related to transportation, resources of the area, military and civilian defense; present, planned, and recommended transport facilities; cost/benefit aspects of area transport development; 9 maps; 16 tables. Detailed economic studies of the report analyze location, availability, and extent of natural resources, among other subjects. The annual value of production of fish and fish products is forecast to increase by 1980 to $22 million.

H. Doc. 176, Transport Requirements for the Growth of Northwest North America, Vol. 2--Research Report by Battelle Memorial Institute on an Integrated Transport System to Encourage Economic Development of Northwest North America (May 25, 1961, Letter from the Chairman, Alaska International Rail and Highway Commission, Transmitting the Final Report of the Alaska International Rail and Highway Commission, pursuant to Public Law 884, 84th Congress), 438 pp., printed. Contains five parts: I. Summary, Conclusions, and Recommendations, II. Introduction, III. Physical Features, Geology, and Climate, IV. The Present Economy, V. Natural Resources--Past, Present, and Future, 2 appendices, 79 tables, 43 figures. This report appraises the resources of the Pacific Northwest (principally Alaska, British Columbia, Yukon, and Northwest Territories, taking inventory of those known to be present in the area and estimating their marketability in the next 20 years. Points out transportation improvements needed for resource development, gives estimated costs of selected transport facilities, compares costs and benefits of such facilities, outlines methods and problems for construction of such facilities, all leading up to recommendations for specific transport improvements. A section is devoted to "Fisheries," containing 8 tables, 7 figures, and 1 map.

POLLUTION OF SEA TREATY IMPLEMENTATION: On August 14, the Senate considered and passed S. 2187, to implement the provisions of the International Convention for the Prevention of Pollution of the Sea by Oil, 1954, with amendments, and cleared it for House.

The House on August 21 passed and cleared for the President S. 2187 (in lieu of H. R. 8152). Earlier in the day the House had passed H. R. 8152, companion bill to S. 2187, but the proceedings were vacated and H. R. 8152 was laid on the table. On Aug. 23, S. 2187, was presented to the President for signature.

On August 30, the President signed S. 2187 (P. L. 87-167). The International Convention is designed to reduce pollution of the sea by oil, action which annually results in the loss of thousands of birds, damage to other fish and wildlife resources, and contamination of recreational beaches.

PORTLAND HARBOR, MAINE, IMPROVEMENT: H. R. 8633 (Garland), introduced in House Aug. 10, a bill which authorizes modification of the existing project for Portland Harbor, Maine, as recommended by the Corps of Engineers, at an estimated cost of $8,340,000; referred to Committee on Public Works.

On September 12, the Senate Committee on Public Works reported out S. 2394 with an amendment (S. Rept. 978).

S. Rept. 978, Authorizing the Improvement of Portland Harbor, Maine (87th Congress, 1st Session, report from the Committee on Public Works to accompany S. 2394), 8 pp., printed. Committee reported bill favorably with amendment, and recommended passage. Contains purpose, description of project, discussion, committee views, agency comments from Department of the Army and Department of Interior, and comments from State of Maine.

SHELLFISH PROCESSING EXEMPTION FROM MINIMUM WAGE: H. R. 8930 (Blitch), H. R. 8931 (Bonner), H. R. 8932 (Downing), H. R. 8933 (Matthews), H. R. 8934 (Sikes), introduced in House August 28, bills to amend the Fair Labor Standards Act of 1938 to continue in effect the exemptions for shellfish processing as contained in such act prior to the Fair Labor Standards Amendments of 1961; to the Committee on Education and Labor. On Sept. 14, S. 2553 (Holland) companion bill, introduced in Senate.

Would retain the previous exemption for shellfish processing from minimum wage provisions of the Fair Labor Standards Act. Prior to enactment this year of Public Law 87-30, which took effect on September 3, 1961, fish and shellfish processing enjoyed both a year-round exemption from the overtime-pay requirements of the Act and a complete exemption from the minimum wage requirements of the Act. Fish and shellfish canning enjoyed the year-round overtime exemption but were subject to the minimum wage. The law, which went into effect September 3, 1961, places fish and shellfish processing on the same basis as fish and shellfish canning: subject to minimum wage but exempt from overtime pay. The bills introduced would retain the minimum-wage exemption for shellfish processing only but would leave fish processing and fish canning subject to this requirement of the Act.

SHELLFISHERIES RESEARCH CENTER: On August 22, the House passed S. 606, providing for the construction of a shellfisheries research center at Milford, Conn., and cleared the bill for the President. Senate passed this bill on June 12. Would authorize the Secretary of the Interior to construct a research center for shellfish production at Milford, Conn., and to acquire such real property as may be necessary. Research center is to consist of research facilities, a pilot hatchery and a training school, and shall be used for the conduct of basic research on the physiology and ecology of commercial shellfish, development of hatchery methods for cultivation of mollusks, and to train persons in the most advanced methods of shellfish culture.

On August 30, the President signed S. 606 (P. L. 87-173.

SHRIMP IMPORT DUTIES: Tariff Treatment of Shrimp Imports (Hearing before the Committee on Ways and Means, U. S. House of Representatives, Eighty-Seventh Congress, First Session, on H. R. 6168, 638 pp., printed. Contains text of bill; departmental reports of Departments of Commerce, Interior, Labor, State, Treasury, and the Tariff Commission; statements of various Congressmen, fishery associations, etc. Bill would impose a duty of 35 percent ad valorem of canned, prepared, or processed shrimp. Fresh, frozen, or unprocessed shrimp could come in duty free up to the volume imported in 1960, but the same duty would apply

on the quantity in excess of the 1960 volume. The Secretary of the Interior would be authorized to allocate this duty-free quota among countries supplying imports of shrimp to the United States in the year 1960. In other words, there would be a country-by-country quota in accordance with the volume of imports of shrimp received from each country in that year.

SUPPLEMENTAL APPROPRIATIONS, FY 1962: Supplemental Appropriation Bill, 1962 (Hearings before the Subcommittee of the Committee on Appropriations, House of Representatives, 87th Congress, 1st Session, on H. R. 9169), 946 pp., printed. Includes hearings on supplemental estimates for Bureau of Commercial Fisheries. An increase of $800,000 was requested for the activity "Research on fish migration over dams." Committee heard the Director and other staff members of the Bureau of Commercial Fisheries.

STATE DEPARTMENT APPROPRIATIONS, FY1962: Departments of State, Justice, the Judiciary, and Related Agencies Appropriations, 1962 (Hearings before the Subcommittee of the Committee on Appropriations, U. S. Senate, Eighty-Seventh Congress, 1st Session, on H. R. 7371), 1245 pp., printed. State Department appropriations contain funds for international fisheries commissions. Contains State Department justification for funds, discusses restoration of funds (for Inter-American Tropical Tuna Commission) disallowed by House, need for restriction on catches of yellowfin tuna, Inter-American Tropical Tuna Commission and possibility of other countries joining commission, tuna research, fisheries attache program, tuna bait research, use of seine method in tuna fishing, bait fishing for tuna, letters from various interested associations and a senator, skipjack tuna, and lamprey control.

On August 14, the Senate Committee on Appropriations, in executive session, ordered favorably reported with amendments H. R. 7371.

S. Rept. No. 731, Departments of State and Justice, the Judiciary, and Related Agencies Appropriations Bill, 1962 (Report of Committee on Appropriations, U. S. Senate, 87th Congress, 1st Session, to accompany H. R. 7371), 16 pp., printed. For the international fisheries commission, the committee approved for Fiscal Year 1962 the full budget estimate of $1,938,000 to cover the costs of the various commissions paid from this appropriation. This is an increase of $42,000 over the amount allowed by the House, which will give the Inter-American Tropical Tuna Commission funds as requested in the budget.

On August 30, the Senate passed H. R. 7371, with amendments. Senate insisted on its amendments, asked conference with House, and appointed conferees.

On September 11, the conferees, in executive session, agreed to file a conference report on the differences between the Senate- and House-passed versions of H. R. 7371. On September 12, the House considered the amendments in disagreement in conference report. Further action was referred to September 13. On September 13, both Houses of Congress adopted conference report and and the bill was cleared for the President.

SUPPLEMENTAL APPROPRIATION FOR FY 1962: H. R. 9169 (Thomas), introduced in House September 12, a bill making supplemental appropriations for the fiscal year ending June 30, 1962, and for other purposes. Bill was reported on September 12, from the House Committee on Appropriations, and committed to the Committee of the Whole House on the State of the Union (H. Rept. 1175). For the Fish and Wildlife Service, the Committee has allowed $400,000, or one-half the supplemental request of the Bureau of Commercial Fisheries, to conduct additional research on the problem of passing migrant fish over dams. This is in addition to $527,000 in the regular 1962 fund bill and $252,000 of Saltonstall-Kennedy funds carried over from last year, making a total of $1,179,000 for the 1962 program. The Committee pointed out that this almost triples the level of 1961, and any additional requirement should be absorbed out of the $3,000,000 of Saltonstall-Kennedy funds which are available for special emergency projects.

TARIFF CLASSIFICATION RESTATEMENT IN TARIFF ACT OF 1930: H. R. 8691 (Mills), introduced in House Aug. 14, a bill to amend the Tariff Act of 1930 and certain related laws to provide for the restatement of the tariff classification provisions, and for other purposes; to the Committee on Ways and Means. On Aug. 16, the Committee on Ways and Means announced that it would receive written statements from interested individuals and organizations on H. R. 8691, the administration's bill to implement the proposed revised tariff schedules as included in the U. S. Tariff Commission's "Tariff Commission Study," of Nov. 15, 1960, which was prepared pursuant to direction of Congress in the Customs Simplification Act of 1954. Statements should be submitted not later than August 29, 1961. H. R. 9189 (Mills), identical bill introduced on Sept. 13.

The proposed Revised Tariff Schedules were made available to the public on November 15, 1960. The bill would provide for (1) the adoption of the tariff schedules of the United States as proposed by the Tariff Commission, and (2) the establishment of procedures for continuing review and revision of the new schedules.

The Customs Simplification Act of 1954 directed the Tariff Commission to make a comprehensive study of the laws prescribing the tariff status of imported articles and to submit to the President and to the Chairmen of the Committee on Ways and Means of the House of Representatives and the Committee on Finance of the Senate a revision and consolidation of those laws, that, in the judgment of the Commission, would accomplish to the extent practicable the following purposes: (1) Establish schedules of tariff classifications which will be logical in arrangement and terminology and adapted to the changes which have occurred since 1930 in the character and importance of articles produced in and imported into the United States and in the markets in which they are sold. (2) Eliminate anomalies and illogical results in the classification of articles. (3) Simplify the determination and application of tariff classifications.

The Commission was directed not to make changes in rates of duty except in those instances where, in the judgment of the Commission, incidental rate changes were necessary to accomplish the purpose of simplification. In the period elapsing between the adoption of the legislation directing this study and the submission of the final report on November 15, 1960, the Tariff Commission (in 1955) submitted to the President and to the Chairmen of the Committees on Finance and Ways and Means an "Interim Report" in which the plans for pursuing the tariff study required by the 1954 legislation were detailed. Widespread press coverage was given to this Interim Report. Subsequently, proposed new tariff schedules were drafted by the Commission

and released to the public during 1958 and 1959. Public hearings were held at frequent intervals by the United States Tariff Commission and many interested parties attended and submitted their views on the proposals of the Commission. It is also understood that during these years the Commission held frequent conferences with domestic industry members and trade associations as well as with importers and their association representatives.

On September 8, the House Committee on Ways and Means met in executive session on H. R. 8691. On September 12, the Committee met again. No announcements were made, and Committee continued on this subject in executive session on September 13.

TARIFF NEGOTIATIONS: H. Con. Res. 368 (Haley), H. Con. Res. 369 (Pillion), and H. Con. Res. 370 (Pirnie), introduced in House August 14, concurrent resolutions declaring the sense of the Congress that no further reductions in tariffs be made during the life of the present Reciprocal Trade Agreements Act; to Committee on Ways and Means. Also, on August 14, H. Con. Res. 373 (Becker), and H. Con. Res. 374 (Blitch); to Committee on Ways and Means. On August 18: H. Con. Res. 375 (Laird) and H. Con. Res. 376 (Philbin). On Aug. 22: H. Con. Res. 379 (Boykin). On Aug. 30: H. Con. Res. 381 (Downing). Aug. 31: H. Con. Res. 382 (Grant). Sept. 7: H. Con. Res. 386 (Alford), and H. Con. Res. 387 (Robison).

TRADE AGREEMENTS: On September 1, the President submitted to both the House and Senate, the fifth annual report on the operation of the trade agreements program (H. Doc. No. 234); referred to the Committee on Ways and Means in the House and to Committee on Finance in Senate.

H. Doc. 234, Fifth Annual Report on the Operation of the Trade Agreements Program (September 1, 1961, Message from the President of the United States, Transmitting the Fifth Annual Report on the Operation of the Trade Agreements Program, Pursuant to Section 350(a) (1) of the Tariff Act of 1930 as Amended), 116 pp., printed. Contains letter of transmittal from the President and I. Development of International Trade in 1960; II. The Trade Agreements Program and the GATT; III. Removal of Quantitative Import Restrictions; IV. Developments in Regional Associations; V. The Safeguarding Procedures of the Trade Agreements Program; VI. United States Tariff Negotiations; 4 charts; 2 tables; and 3 annexes. Also discusses trade matters of fundamental importance to the nations that participate in the work of the General Agreement on Tariffs and Trade (GATT). The United States, in line with its over-all trade expansion program, continued to press for removal of restrictions on American exports. Among items considered at the Geneva meeting were: removal of import restrictions; the GATT program for expansion of trade; the formation of regional markets.

VESSEL TRANSFER ("ALASKA"): The House on August 21 passed and sent to the Senate without amendments H. R. 3788, providing for the transfer of the U.S. vessel Alaska to the State of California for the use and benefit of that State's Department of Fish and Game. Read in Senate on August 22 and referred to Committee on Commerce. On August 29, the Senate Committee on Commerce reported out favorably H. R. 3788 without amendment (S. Rept. 830).

S. Rept. 830, Providing for Transfer of SS "Alaska" to the State of California for Use by State Department of Fish and Game (87th Congress, 1st Session, report from Committee on Commerce, to accompany H. R. 3788), 2 pp., printed. Committee reported bill favorably without amendment and recommended passage. Contains purpose of bill, general information, and report from Interior Department. There are no changes in existing law.

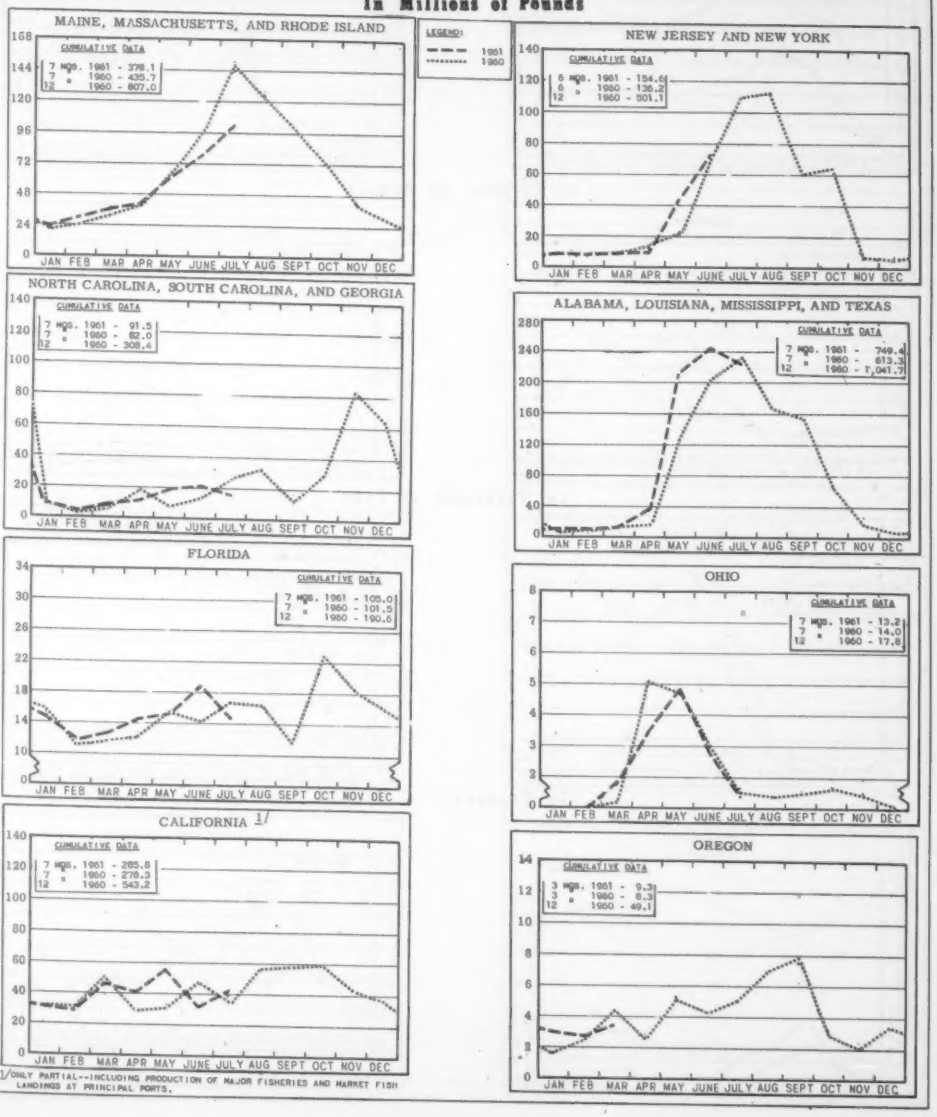
On September 1, Senator Morse asked unanimous consent that the Senate return to consideration of H. R. 3788, making objection to the bill being considered on calendar until full explanation is given by General Services Administration and Department of Interior, explaining by what procedure and law the vessel Alaska was turned over to the State of California, and by what right this course of action was allowed.

WATER RESOURCES CONSERVATION: On August 16, the Senate Committees on Interior and Insular Affairs and Public Works concluded their joint hearings on S. 2246, providing financial assistance to the States for comprehensive water resources planning, after receiving testimony from various Senators, government, and public officials.

Water Resources Planning Act of 1961 (Joint Hearings of the Committee on Interior and Insular Affairs, and the Committee on Public Works, United States Senate, Eighty-Seventh Congress, 1st Session on S. 2246, S. 1629, and S. 1778, bills pertaining to the Water Resources Planning Act of 1961; and Hearing of the Committee on Interior and Insular Affairs on S. 1629, a bill to provide financial assistance to states for water resources planning), 229 pp., printed. Contains texts of bills, and reports from Departments of Agriculture, Interior, and Budget; statements of various public and government officials; letters and telegrams from various conservation organizations, and public and private individuals, and 34 of the states.

CHART 1 - FISHERY LANDINGS for SELECTED STATES

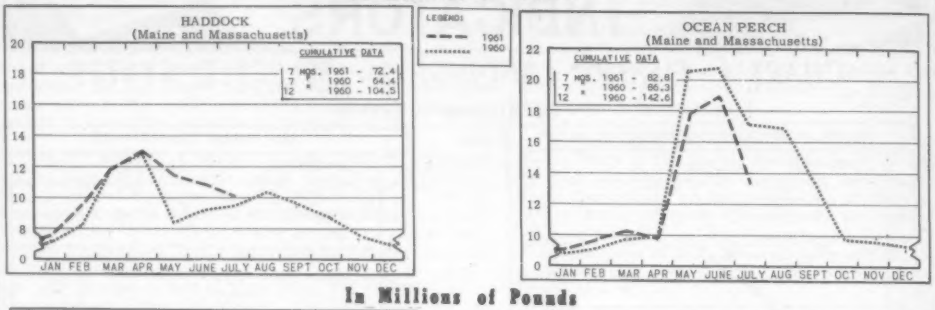
In Millions of Pounds


MAINE, MASSACHUSETTS, AND RHODE ISLAND
CUMULATIVE DATA
7 MOS. 1961 - 378.1
7 " 1960 - 435.7
12 " 1960 - 807.0
LEGEND:
1961
1960
NEW JERSEY AND NEW YORK
CUMULATIVE DATA
6 MOS. 1961 - 154.6
6 " 1960 - 136.2
12 " 1960 - 301.1
NORTH CAROLINA, SOUTH CAROLINA, AND GEORGIA
CUMULATIVE DATA
7 MOS. 1961 - 91.5
7 " 1960 - 82.0
12 " 1960 - 308.4
ALABAMA, LOUISIANA, MISSISSIPPI, AND TEXAS
CUMULATIVE DATA
7 MOS. 1961 - 749.4
7 " 1960 - 813.3
12 " 1960 - 1,041.7
FLORIDA
CUMULATIVE DATA
7 MOS. 1961 - 105.0
7 " 1960 - 101.5
12 " 1960 - 190.6
OHIO
CUMULATIVE DATA
7 MOS. 1961 - 13.2
7 " 1960 - 14.0
12 " 1960 - 17.8
CALIFORNIA 1/
CUMULATIVE DATA
7 MOS. 1961 - 285.8
7 " 1960 - 278.3
12 " 1960 - 543.2
OREGON
CUMULATIVE DATA
3 MOS. 1961 - 9.3
3 " 1960 - 8.3
12 " 1960 - 49.1
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

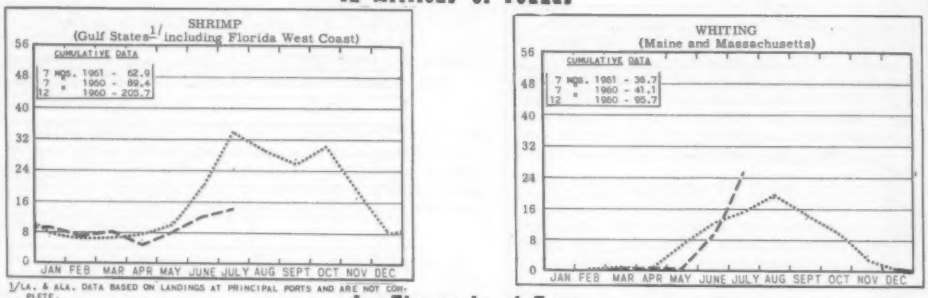
1/ONLY PARTIAL--INCLUDING PRODUCTION OF MAJOR FISHERIES AND MARKET FISH LANDINGS AT PRINCIPAL PORTS.

CHART 2 - LANDINGS for SELECTED FISHERIES

In Millions of Pounds

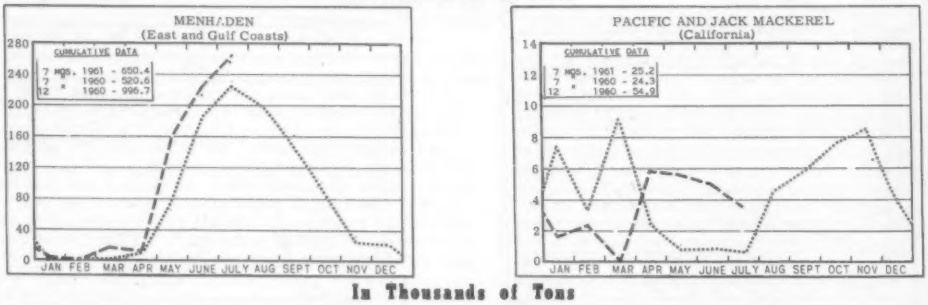

HADDOCK
(Maine and Massachusetts)
CUMULATIVE DATA
7 MOS. 1961 - 72.4
7 " 1960 - 64.4
12 " 1960 - 104.5
LEGEND:
1961
1960
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
OCEAN PERCH
(Maine and Massachusetts)
CUMULATIVE DATA
7 MOS. 1961 - 82.8
7 " 1960 - 86.3
12 " 1960 - 142.6
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

In Millions of Pounds


SHRIMP
(Gulf States 1/ including Florida West Coast)
CUMULATIVE DATA
7 MOS. 1961 - 62.9
7 " 1960 - 89.4
12 " 1960 - 209.7
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
WHITING
(Maine and Massachusetts)
CUMULATIVE DATA
7 MOS. 1961 - 36.7
7 " 1960 - 41.1
12 " 1960 - 95.7
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

1/ LA. & ALA. DATA BASED ON LANDINGS AT PRINCIPAL PORTS AND ARE NOT COMPLETE.

In Thousands of Tons


MENHADEN
(East and Gulf Coasts)
CUMULATIVE DATA
7 MOS. 1961 - 650.4
7 " 1960 - 520.6
12 " 1960 - 996.7
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
PACIFIC AND JACK MACKEREL
(California)
CUMULATIVE DATA
7 MOS. 1961 - 25.2
7 " 1960 - 24.3
12 " 1960 - 54.9
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

In Thousands of Tons

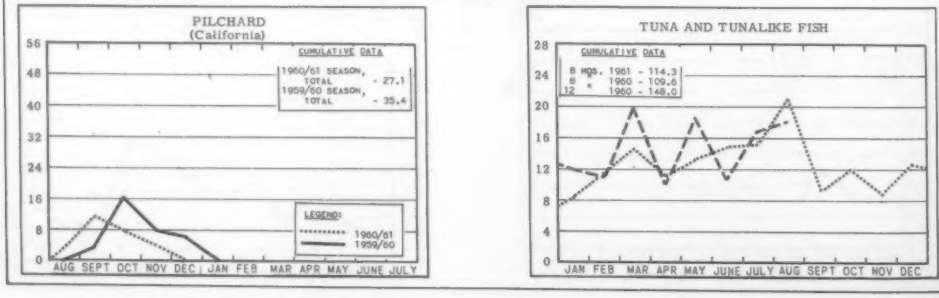
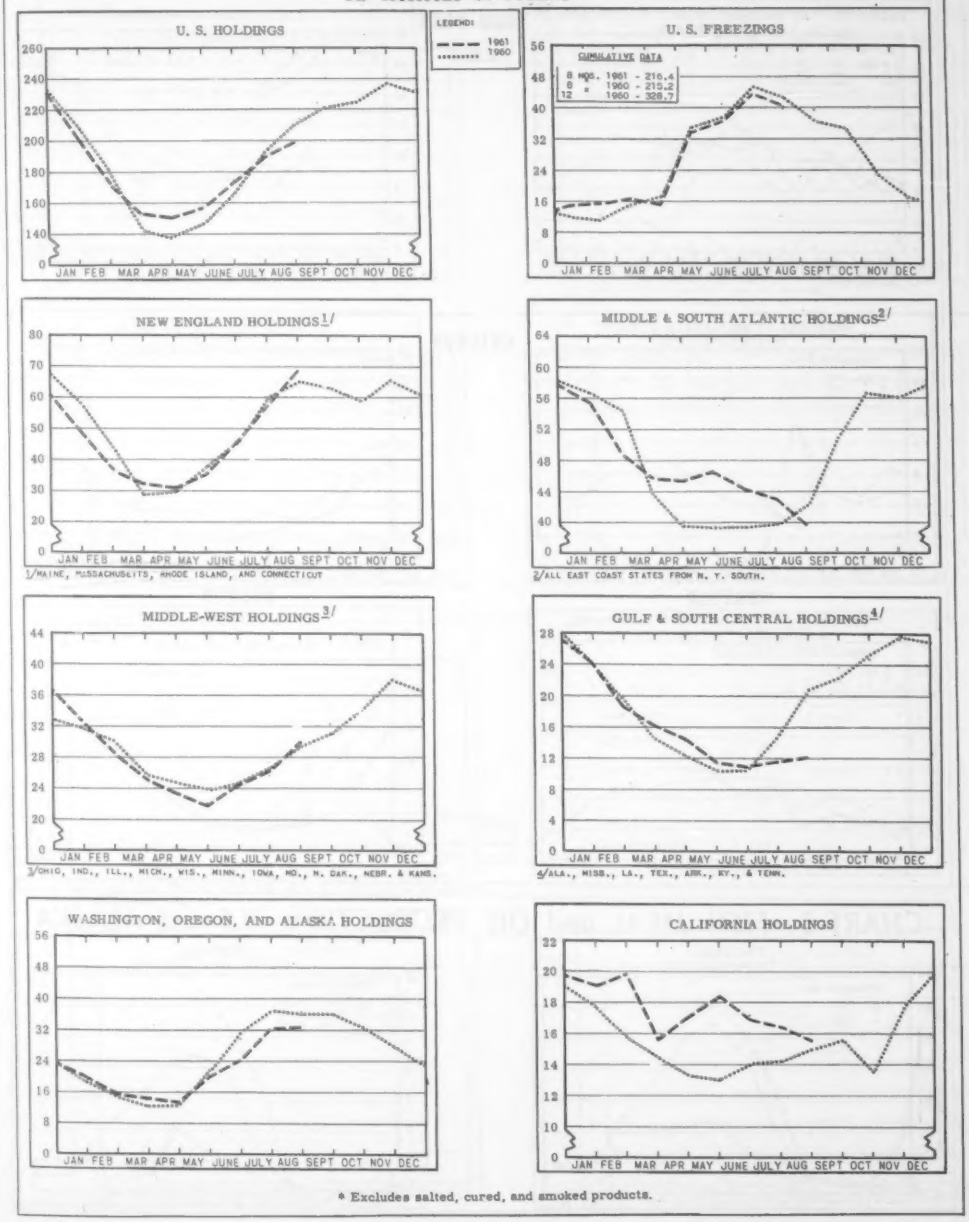

PILCHARD
(California)
CUMULATIVE DATA
1960/61 SEASON, TOTAL - 27.1
1959/60 SEASON, TOTAL - 35.4
LEGEND:
1960/61
1959/60
AUG SEPT OCT NOV DEC JAN FEB MAR APR MAY JUNE JULY
TUNA AND TUNALIKE FISH
CUMULATIVE DATA
8 MOS. 1961 - 114.3
8 " 1960 - 109.6
12 " 1960 - 148.0
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

CHART 3 - COLD-STORAGE HOLDINGS and FREEZINGS of FISHERY PRODUCTS *

In Millions of Pounds


U. S. HOLDINGS
LEGEND:
1961
1960
U. S. FREEZINGS
CUMULATIVE DATA
8 MOS. 1961 - 216.4
8 " 1960 - 215.2
12 " 1960 - 328.7
NEW ENGLAND HOLDINGS 1/
MIDDLE & SOUTH ATLANTIC HOLDINGS 2/
MIDDLE-WEST HOLDINGS 3/
GULF & SOUTH CENTRAL HOLDINGS 4/
WASHINGTON, OREGON, AND ALASKA HOLDINGS
CALIFORNIA HOLDINGS
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

1/MAINE, MASSACHUSETTS, RHODE ISLAND, AND CONNECTICUT

2/ALL EAST COAST STATES FROM N. Y. SOUTH.

3/OHIO, IND., ILL., MICH., WIS., MINN., IOWA, MO., N. DAK., NEBR. & KANS.

4/ALA., MISS., LA., TEX., ARK., KY., & TENN.

* Excludes salted, cured, and smoked products.

CHART 4 - RECEIPTS and COLD-STORAGE HOLDINGS of FISHERY PRODUCTS at PRINCIPAL DISTRIBUTION CENTERS

In Millions of Pounds

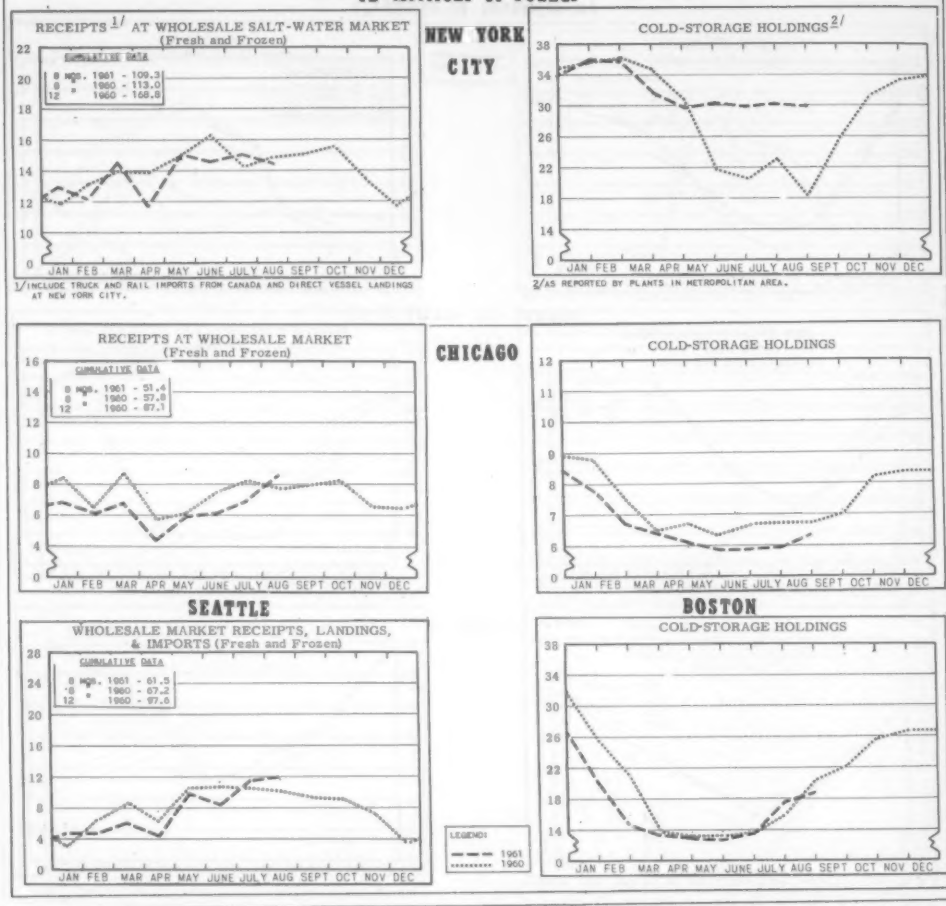

RECEIPTS 1/ AT WHOLESALE SALT-WATER MARKET
(Fresh and Frozen)
CUMULATIVE DATA
8 MOS. 1961 - 109.3
8 " 1960 - 113.0
12 " 1960 - 168.8
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
1/INCLUDE TRUCK AND RAIL IMPORTS FROM CANADA AND DIRECT VESSEL LANDINGS AT NEW YORK CITY.
NEW YORK CITY
COLD-STORAGE HOLDINGS 2/
2/AS REPORTED BY PLANTS IN METROPOLITAN AREA.
RECEIPTS AT WHOLESALE MARKET
(Fresh and Frozen)
CUMULATIVE DATA
8 MOS. 1961 - 51.4
8 " 1960 - 57.8
12 " 1960 - 87.1
CHICAGO
COLD-STORAGE HOLDINGS
SEATTLE
WHOLESALE MARKET RECEIPTS, LANDINGS, & IMPORTS (Fresh and Frozen)
CUMULATIVE DATA
8 MOS. 1961 - 61.5
8 " 1960 - 67.2
12 " 1960 - 97.6
BOSTON
COLD-STORAGE HOLDINGS
LEGEND:
1961
1960

CHART 5 - FISH MEAL and OIL PRODUCTION - U.S and ALASKA

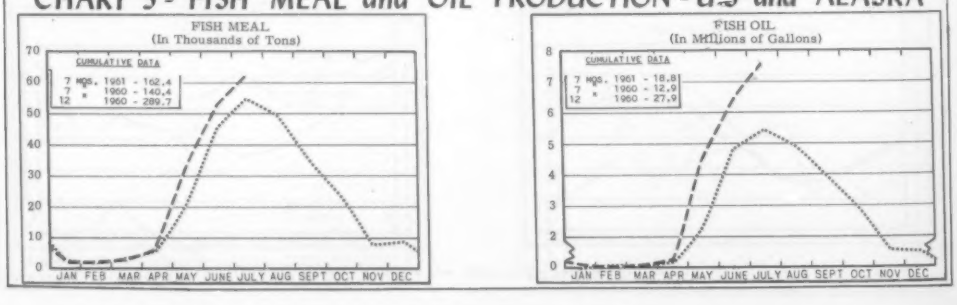
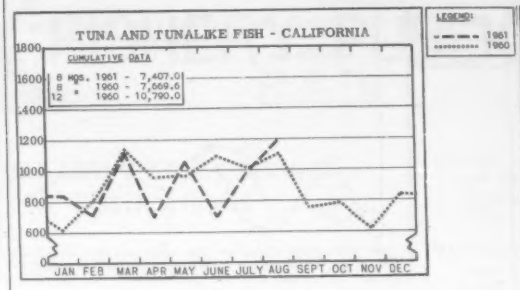
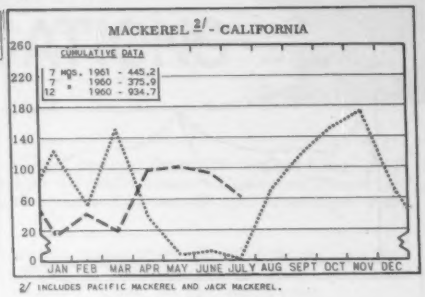

FISH MEAL
(In Thousands of Tons)
CUMULATIVE DATA
7 MOS. 1961 - 162.4
7 " 1960 - 140.4
12 " 1960 - 289.7
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
FISH OIL
(In Millions of Gallons)
CUMULATIVE DATA
7 MOS. 1961 - 18.8
7 " 1960 - 12.9
12 " 1960 - 27.9

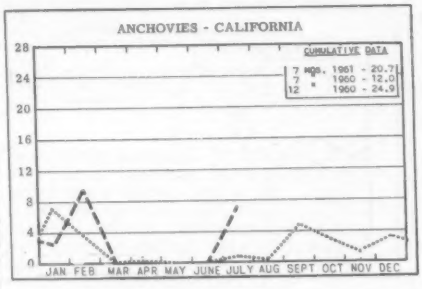
CHART 6 - CANNED PACKS of SELECTED FISHERY PRODUCTS

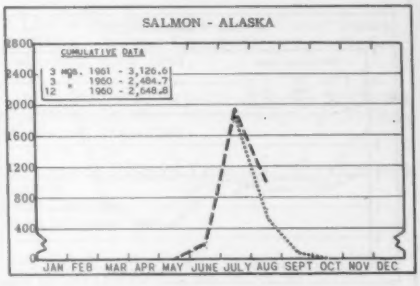
In Thousands of Standard Cases

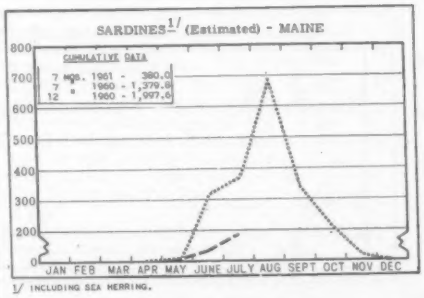

TUNA AND TUNALIKE FISH - CALIFORNIA
CUMULATIVE DATA
6 MOS. 1961 - 7,407.0
6 " 1960 - 7,569.6
12 " 1960 - 10,790.0
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC


MACKEREL 2/ - CALIFORNIA
CUMULATIVE DATA
7 MOS. 1961 - 445.2
7 " 1960 - 375.9
12 " 1960 - 934.7
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

2/ INCLUDES PACIFIC MACKEREL AND JACK MACKEREL.


ANCHOVIES - CALIFORNIA
CUMULATIVE DATA
7 MOS. 1961 - 20.7
7 " 1960 - 12.0
12 " 1960 - 24.9
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

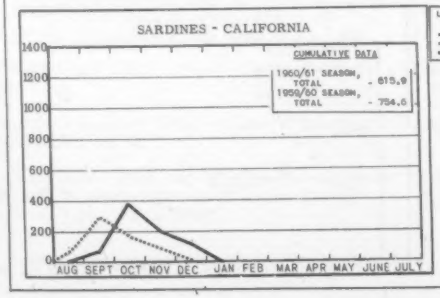


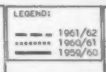

SARDINES 1/ (Estimated) - MAINE
CUMULATIVE DATA
7 MOS. 1961 - 380.0
7 " 1960 - 1,379.8
12 " 1960 - 1,997.6
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

1/ INCLUDING SEA HERRING.

STANDARD CASES

Variety	No. Cans	Designation	Net Wgt.
SARDINES.....	100	¼ drawn	3¾ oz.
SHRIMP.....	48	--	5 oz.
TUNA.....	48	# ½ tuna	6 & 7 oz.
PILCHARDS...	48	# 1 oval	15 oz.
SALMON.....	48	1-lb. tall	16 oz.
ANCHOVIES...	48	½-lb.	8 oz.


SARDINES - CALIFORNIA
CUMULATIVE DATA
1960/61 SEASON, TOTAL - 615.9
1959/60 SEASON, TOTAL - 754.6
AUG SEPT OCT NOV DEC JAN FEB MAR APR MAY JUNE JULY



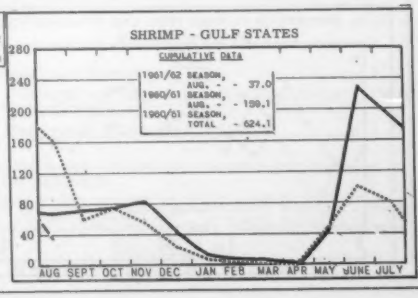
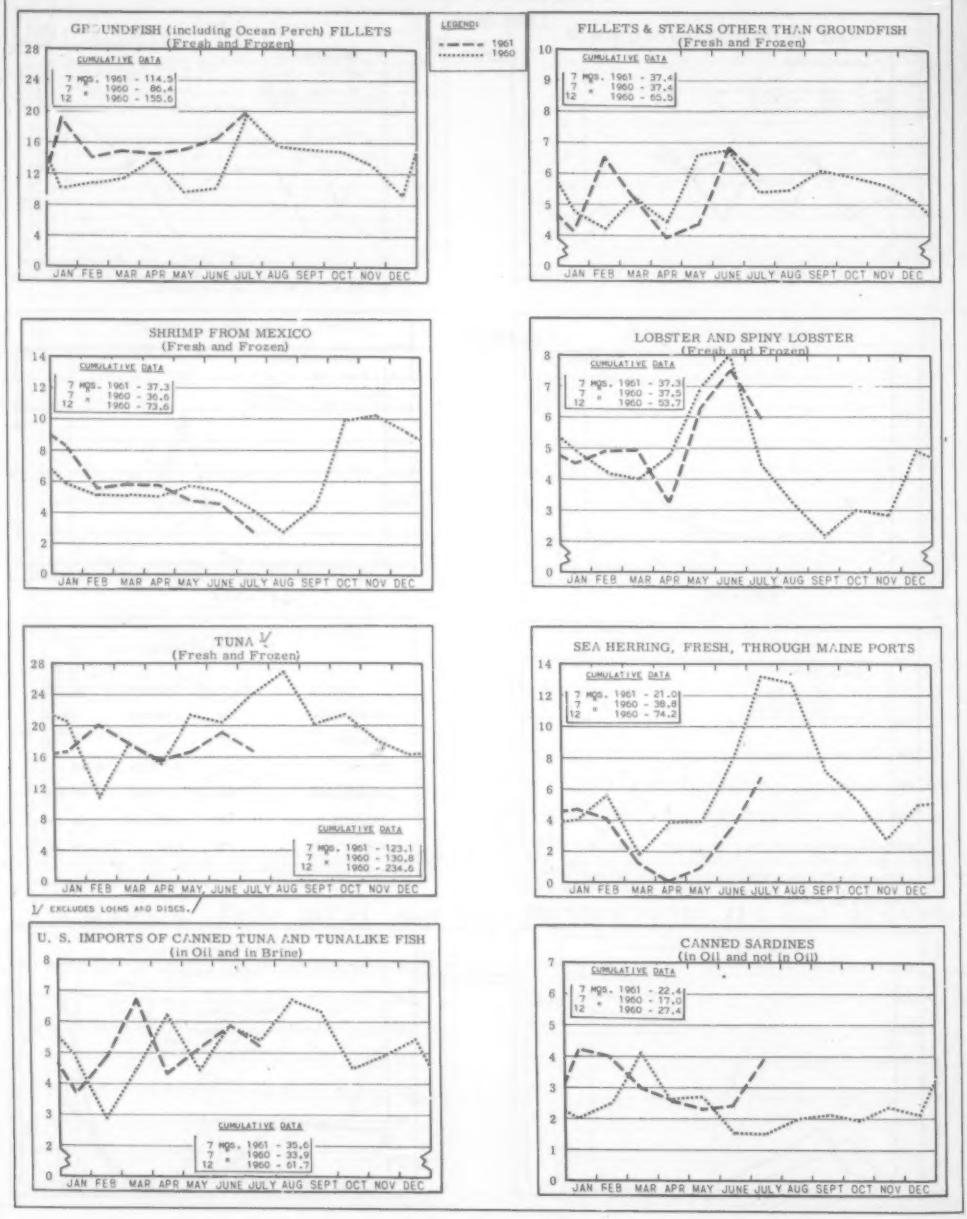

SHRIMP - GULF STATES
CUMULATIVE DATA
1961/62 SEASON, AUG. - - 37.0
1960/61 SEASON, AUG. - - 199.1
1960/61 SEASON, TOTAL - 624.1
AUG SEPT OCT NOV DEC JAN FEB MAR APR MAY JUNE JULY

CHART 7 - U.S. FISHERY PRODUCTS IMPORTS

In Millions of Pounds


GROUNDFISH (including Ocean Perch) FILLETS
(Fresh and Frozen)
CUMULATIVE DATA
7 MOS. 1961 - 114.5
7 " 1960 - 86.4
12 " 1960 - 155.6
LEGEND:
1961
1960
FILLETS & STEAKS OTHER THAN GROUNDFISH
(Fresh and Frozen)
CUMULATIVE DATA
7 MOS. 1961 - 37.4
7 " 1960 - 37.4
12 " 1960 - 65.9
SHRIMP FROM MEXICO
(Fresh and Frozen)
CUMULATIVE DATA
7 MOS. 1961 - 37.3
7 " 1960 - 36.6
12 " 1960 - 73.6
LOBSTER AND SPINY LOBSTER
(Fresh and Frozen)
CUMULATIVE DATA
7 MOS. 1961 - 37.3
7 " 1960 - 37.5
12 " 1960 - 53.7
TUNA 1/
(Fresh and Frozen)
CUMULATIVE DATA
7 MOS. 1961 - 123.1
7 " 1960 - 130.8
12 " 1960 - 234.6
1/ EXCLUDES LOINS AND DISCS.
SEA HERRING, FRESH, THROUGH MAINE PORTS
CUMULATIVE DATA
7 MOS. 1961 - 21.0
7 " 1960 - 38.8
12 " 1960 - 74.2
U. S. IMPORTS OF CANNED TUNA AND TUNALIKE FISH
(in Oil and in Brine)
CUMULATIVE DATA
7 MOS. 1961 - 35.6
7 " 1960 - 33.9
12 " 1960 - 61.7
CANNED SARDINES
(in Oil and not in Oil)
CUMULATIVE DATA
7 MOS. 1961 - 22.4
7 " 1960 - 17.0
12 " 1960 - 27.4
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

FISH AND WILDLIFE SERVICE PUBLICATIONS

THESE PROCESSED PUBLICATIONS ARE AVAILABLE FREE FROM THE DIVISION OF INFORMATION, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C. TYPES OF PUBLICATIONS ARE DESIGNATED AS FOLLOWS:

CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES.
FL - FISHERY LEAFLETS.
MNL - REPRINTS OF REPORTS ON FOREIGN FISHERIES.
SEP.- SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.
SL - LISTS OF DEALERS IN AND PRODUCERS OF FISHERY PRODUCTS AND BYPRODUCTS.
WL - WILDLIFE LEAFLETS.

Number — Title

CFS-2605 - New Jersey Landings, March 1961, 3 pp.
CFS-2606 - New Jersey Landings, April 1961, 4 pp.
CFS-2620 - Minnesota Landings, April 1961, 2 pp.
CFS-2628 - South Carolina Landings, May 1961, 2 pp.
CFS-2630 - Shrimp Landings, February 1961, 6 pp.
CFS-2631 - New Jersey Landings, May 1961, 4 pp.
CFS-2633 - Florida Landings, May 1961, 9 pp.
CFS-2634 - Maine Landings, May 1961, 3 pp.
CFS-2635 - Fish Meal and Oil, May 1961, 2 pp.
CFS-2637 - New York Landings, May 1961, 5 pp.
CFS-2639 - Michigan Landings, May 1961, 2 pp.
CFS-2640 - Wisconsin Landings, May 1961, 2 pp.
CFS-2641 - Virginia Landings, May 1961, 4 pp.
CFS-2642 - Minnesota Landings, May 1961, 2 pp.
CFS-2643 - Texas Landings, March 1961, 3 pp.
CFS-2644 - California Landings, April 1961, 4 pp.
CFS-2645 - Ohio Landings, May 1961, 2 pp.
CFS-2646 - Mississippi Landings, May 1961, 2 pp.
CFS-2647 - Texas Landings, April 1961, 3 pp.
CFS-2649 - Fish Sticks and Portions, April-June 1961, 3 pp.
CFS-2650 - North Carolina Landings, June 1961, 4 pp.
CFS-2651 - Georgia Landings, June 1961, 2 pp.
CFS-2652 - South Carolina Landings, June 1961, 2 pp.
CFS-2654 - Florida Landings, June 1961, 9 pp.
CFS-2655 - Fish Meal and Oil, June 1961, 2 pp.
CFS-2659 - Maryland Landings, June 1961, 3 pp.
CFS-2660 - Rhode Island Landings, May 1961, 3 pp.

FL-9 - (Revised April 1961) - Available Leaflets on Fisheries, 7 pp.

FL-411 - (Revised January 1960) - Care of Tropical Aquarium Fishes, 18 pp.

FL-512 - United States Fish and Wildlife Service Publications in Limnology, 1940-1960, compiled by Lola T. Dees, 7 pp., April 1961.

FL-514 - List of Special Scientific Report (Nos. 1-67) and Special Scientific Report-Fisheries (Nos. 1-357), compiled by Lola T. Dees, 36 pp., processed, April 1961.

FL-515 - United States Fish and Wildlife Service Papers on Physical and Chemical Oceanography, compiled by Lola T. Dees, 14 pp., April 1961.

FL-518 - A List of the Circulars of the United States Fish and Wildlife Service, compiled by Lola T. Dees, 9 pp., processed, June 1961.

FL-519 - List of Research Reports of the United States Fish and Wildlife Service, compiled by Lola T. Dees, 5 pp., processed, June 1961.

Wholesale Dealers in Fishery Products, 1961 (Revised):
SL-12 - Virginia
SL-13 - North Carolina
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MNL- 7 - Mexican Fisheries, 1960.
MNL- 8 - Portugal's Fisheries Statistical Report, 1960.
MNL-26 - Taiwan Fisheries in 1960.
MNL-56 - Norwegian Fisheries, 1960.

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ice, U. S. Fish and Wildlife Service, 400 E. Lombard St., Baltimore 2, Md.) Receipts of fresh- and salt-water fish and shellfish at Baltimore by species and by states and provinces; total receipts by species and comparisons with previous years; and wholesale prices on the Baltimore market; for the months indicated.

California Fishery Products Monthly Summary, Part I--Fishery Products Production and Market Data, June 1961, 15 pp. (Market News Service, U. S. Fish and Wildlife Service, Post Office Bldg., San Pedro, Calif.) California cannery receipts of tuna and tunalike fish and other species used for canning; pack of canned tuna, tunalike fish, mackerel, and anchovies; market fish receipts at San Pedro, Santa Monica, and Eureka areas; California imports; canned fish and frozen shrimp prices; ex-vessel prices for cannery fish; American Tuna Boat Association auction sales; Oregon and Washington receipts (domestic and imports) of fresh and frozen tuna and tunalike fish; for the month indicated.

Chemical Control of POLYDORA WEBSTERI and Other Annelids Inhabiting Oyster Shells, by Clyde L. MacKenzie, Jr., and L. W. Shearer, 7 pp., illus., processed. (Reprinted from Proceedings of the National Shellfisheries Association, vol. 50, 1961, pp. 105-111.) U. S. Bureau of Commercial Fisheries, Biological Laboratory, Milford, Conn.

(Chicago) Monthly Summary of Chicago's Fresh and Frozen Fishery Products Receipts and Wholesale Market Prices, July 1961, 13 pp. (Market News Service, U. S. Fish and Wildlife Service, 565 W. Washington St., Chicago 6, Ill.) Receipts at Chicago by species and by states and provinces for fresh- and salt-water fish and shellfish; and wholesale prices for fresh and frozen fishery products; for the month indicated.

The Effects of Salt Solutions of Different Strengths on Oyster Enemies, by L. W. Shearer and C. L. MacKenzie, Jr., 7 pp., processed. (Reprinted from Proceedings of the National Shellfisheries Association, vol. 50, 1961, pp. 97-103.) U. S. Bureau of Commercial Fisheries, Biological Laboratory, Milford, Conn.

The Geographic Distribution of the Shrimp of Northwest Mexico, and the Problem of the Fixed Fishing Gears--Traps (Discussion, Resume, Conclusions), by Hector Chapa Saldana, 52 pp., processed, 1956. (Translated from Spanish La Distribucion Geografica de los Camarones del Noroeste de Mexico, y el Problema de las Artes Fijas de Pesca, pp. 49-84.) Biological Laboratory, Bureau of Commercial Fisheries, U. S. Fish and Wildlife Service, Galveston, Tex., September 22, 1960.

Gulf Monthly Landings, Production, and Shipments of Fishery Products, June 1961, 8 pp. (Market News Service, U. S. Fish and Wildlife Service, 609-611 Federal Bldg., New Orleans 12, La.) Gulf States shrimp, oyster, finfish, and blue crab landings; crab meat production; LCL express shipments from New Orleans; Gulf menhaden landings and production of meal, solubles, and oil; wholesale prices of fish and shellfish on the New Orleans French Market; fishery imports at Port Isabel and Brownsville, Tex., from Mexico; and sponge sales; for the month indicated.

Inheritance of Shell Markings and Growth in the Hard Clam, VENUS MERCENARIA, by Paul E. Chanley, 7 pp., illus., processed. (Reprinted from Proceedings of the National Shellfisheries Association, vol. 50, 1961, pp. 163-169.) U. S. Bureau of Commercial Fisheries, Biological Laboratory, Milford, Conn.

Monthly Summary of Fishery Products Production in Selected Areas of Virginia, North Carolina, and Maryland, July 1961, 4 pp. (Market News Service, U. S. Fish and Wildlife Service, 18 So. King St., Hampton, Va.) Fishery landings and production for the Virginia areas of Hampton Roads, Lower Northern Neck, and Eastern Shore; the Maryland areas of Crisfield, Cambridge, and Ocean City; and the North Carolina areas of Atlantic, Beaufort, and Morehead City; together with cumulative and comparative data; for the month indicated.

New England Fisheries--Monthly Summary, June 1961, 22 pp. (Market News Service, U. S. Fish and Wildlife Service, 10 Commonwealth Pier, Boston 10, Mass.) Reviews the principal New England fishery ports, and presents food fish landings by ports and species; industrial fish landings and ex-vessel prices; imports; cold-storage stocks of fishery products in New England warehouses; fishery landings and ex-vessel prices for ports in Massachusetts (Boston, Gloucester, New Bedford, Provincetown, and Woods Hole), Maine (Portland and Rockland), Rhode Island (Point Judith), and Connecticut (Stonington); frozen fishery products prices to primary wholesalers at Boston, Gloucester, and New Bedford; and landings and ex-vessel prices for fares landed at the Boston Fish Pier and sold through the New England Fish Exchange; for the month indicated.

New York City's Wholesale Fishery Trade--Monthly Summary for June 1961, 18 pp. (Market News Service, 155 John St., New York 38, N. Y.) Includes summaries and analyses of receipts and prices on wholesale Fulton Fish Market, imports entered at New York City, primary wholesaler prices for frozen products, and marketing trends; for the month indicated.

Production of Fishery Products in Selected Areas of Alabama, Florida, Louisiana, Mississippi, and Texas, 1960, by Peter DiMarco, 42 pp., processed, August 4, 1961. (Available free from the U. S. Fish and Wildlife Service, 609-611, Federal Bldg., 600 South St., New Orleans 12, La.) Part I reports on trends and conditions in Gulf Coast fisheries during 1960 and gives a resume of the individual fisheries. For the shrimp fishery, a detailed account is presented of total landings by states, extent of coverage of landings, composition of shrimp landings by species and sizes, prices, canning, imports, cold-storage stocks, and general trends and developments. Discusses production and market conditions for the oyster and blue crab fisheries, as well as imports of fresh and frozen fish and shellfish. Part II includes shrimp closed seasons in effect in the Gulf States during 1960, minimum shrimp size regulations, conversion factors and container capacities, and shrimp sizes. The second part also contains statistical tables showing total fishery products landings; crab meat production by areas and months; fishery imports through the New Orleans and Morgan City, La., Customs Districts and Port Isabel

and Brownsville, Tex.; and LCL express shipments from New Orleans for 1960 by months and destination. Also includes tables showing monthly range of wholesale prices of fishery products on the New Orleans French Market; Gulf States weekly oyster and shrimp packs, 1959/60 season and packs by season 1955-60; summary of Gulf shrimp landings for selected areas, 1959-60 and 5-year averages; and fishery products market classifications in the Gulf area.

(Seattle) Washington, Oregon, and Alaska Receipts and Landings of Fishery Products for Selected Areas and Fisheries, Monthly Summary, June and July, 1961, 9 pp. each. (Market News Service, U. S. Fish and Wildlife Service, Pier 42 South, Seattle 4, Wash.) Includes landings and local receipts, with ex-vessel and wholesale prices in some instances, as reported by Seattle and Astoria (Oreg.) wholesale dealers; shipments of fishery products; also Northwest Pacific halibut landings; and Washington shrimp landings; for the month indicated.

THE FOLLOWING ENGLISH TRANSLATIONS OF FOREIGN LANGUAGE ARTICLES ARE AVAILABLE ONLY FROM THE U. S. FISH AND WILDLIFE SERVICE BIOLOGICAL LABORATORY, HONOLULU, HAWAII:

Families of Fishes New to the Antarctic (Communication I), by A. P. Andriiashev, 9 pp., illus., processed. (Translated from Russian Zoologicheskii Zhurnal, Academy of Sciences of the USSR, vol. 39, no. 2, 1960, pp. 244-249.)

The Utilization of a Submarine for Scientific Fisheries Research (Expeditions of the Submarine Severyanka), by V. P. Zaitsev and D. V. Radakov, 4 pp., processed, July 1961. (Translated from Russian Soviet Fisheries Investigations in North European Seas, 1960, pp. 463-465.)

THE FOLLOWING SERVICE PUBLICATIONS ARE FOR SALE AND ARE AVAILABLE ONLY FROM THE SUPERINTENDENT OF DOCUMENTS, WASHINGTON 25, D. C.

"Applications of a Boat-Rigged Direct-Current Shocker on Lakes and Streams in West-Central Wisconsin," by Ludwig Frankenberger, article, Progressive Fish-Culturist, vol. 22, no. 3, 1960, pp. 124-128, processed, single copy 25 cents.

"Channel Catfish Culture in California, by G. E. Geibel and P. J. Murray, article, Progressive Fish-Culturist, vol. 23, no. 3, July 1961, pp. 99-105, processed, single copy 25 cents.

A Collapsible Nylon Fish Trap for Pond Sampling," by Alfred Houser, article, Progressive Fish-Culturist, vol. 22, no. 3, 1960, pp. 129-133, processed, single copy 25 cents.

Fishery Statistics of the United States, 1959, by E. A. Power, Statistical Digest No. 51, 458 pp., illus., printed, $2, 1961. The latest in a series of annual statistical reports on the fisheries of the United States contains data on the catch and ex-vessel value of fishery products, employment in the fisheries, quantity of gear operated, the number of fishing craft employed in the capture of fishery products, and certain information on the production and value of manufactured fishery products and byproducts. Historical fishery statistics in the report include data on the areas in the United States for which statistical surveys had been conducted from 1880 to 1959, inclusive. The catch of fishery products in all sections of the United States during 1959 totaled approximately 5.1 billion pounds, valued at $346 million ex-vessel--an increase of 8 percent in quantity but a decrease of 7 percent in value as compared with 1958.

Menhaden continued to rank first in quantity among the species taken by United States fishermen, yielding a catch of 2.2 billion pounds--43 percent of the total landings. Landings were up in all areas with the yield in the Gulf States reaching a record of 752 million pounds, an increase of 70 percent over the 1958 catch in these States.

The 1959 catch of shrimp, amounting to 240 million pounds valued at $58 million, yielded more revenue to United States fishermen than any other species. Large runs of brown shrimp in Louisiana and Mississippi during the late spring and early summer and off the Texas Coast in the late summer and early fall contributed chiefly to the increase. Despite heavier landings in 1959 the shrimp industry faced many problems, among which was the steady decline of retail prices, resulting in a 20-percent loss in total value as compared with 1958.

The salmon fishery in the four Pacific Coast States, in 1959, yielded a commercial catch of only 202 million pounds--the smallest during the century. Landings in Alaska were 39 percent less than in 1958; while the Oregon catch was down 35 percent, and Washington, 22 percent. However, large catches of chinook and silver in California raised that State's catch to 6.8 million pounds.

Reedville, Virginia, with landings of 324 million pounds, mainly menhaden, was the leading United States fish-landing port in 1959. For the first time, the catch of fish for industrial purposes and for animal feeding--2,753 million pounds--exceeded the quantity taken for human consumption--2,369 million pounds. Canned fishery products totaling 975 million pounds were packed in the United States, Puerto Rico, and American Samoa, yielding $348 million. The production of fish meal and scrap amounted to 307 thousand tons--58 thousand tons more than in 1958. The production of fresh and frozen packaged fish fillets and steaks totaled 147.2 million pounds--a decrease of 8.6 million pounds as compared with the previous year. The value of fishery imports entered for consumption in 1959 was 12 percent greater than in the previous year, while the value of exports of domestic fishery products increased 43 percent. Important items received in considerably greater volume during 1959 were frozen tuna, shrimp, groundfish fillets, and canned tuna.

Biological information included provides detailed data on fluctuations in the commercial catch by species, locality, gear, and type of craft operated.

"Results of Planting Kokanee Salmon in Two Adirondack Mountain Lakes, New York," by Dwight A. Webster and William Flick, article, Progressive Fish-Culturist, vol. 22, no. 2, 1960, pp. 59-63, processed, single copy 25 cents.

"A Small Drag Net for Capture of Bottom Fish and Invertebrates," by S. U. Quadri, article, Progressive

Fish-Culturist, vol. 22, no. 2, 1960, pp. 90-91, processed, single copy 25 cents.

"A Unitized System of Water-Level and Fish-Population Control Structures for Spawning Sloughs," by Donald R. Franklin and Lloyd L. Smith, Jr., article, Progressive Fish-Culturist, vol. 22, no. 3, 1960, pp. 138-140, processed, single copy 25 cents.

MISCELLANEOUS PUBLICATIONS

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM. CORRESPONDENCE REGARDING PUBLICATIONS THAT FOLLOW SHOULD BE ADDRESSED TO THE RESPECTIVE ORGANIZATIONS OR PUBLISHER MENTIONED. DATA ON PRICES, IF READILY AVAILABLE, ARE SHOWN.

AIRPLANE SPOTTING:

"Directing Fishing Vessels to Herring Schools with Aircraft," by V. Maslov, article, Rybnoe Khoziaistvo, vol. 34, 1958, pp. 35-37, printed in Russian. Rybnoe Khoziaistvo, VNIRO Glavniproekta, pri Gosplanie SSSR, Moscow, U.S.S.R.

ALGAE:

An Algal Mass-Culture Unit for Feeding Marine Invertebrate Larvae, by B. Wisely and C. Purday, Technical Paper No. 12, 14 pp., illus., printed. Division of Fisheries and Oceanography, Commonwealth Scientific and Industrial Research Organization, Melbourne, Australia, 1961.

The Wonders of Algae, by Lucy Kavaler, 96 pp., illus., printed, $3.50. Doubleday & Co., Garden City, N. Y. Describes generally marine and fresh-water algae, and tells young people about their space age uses.

AMINO ACIDS:

"The Chemical Composition of the Scent of Fresh Water Fish With Special Reference to Amines and Amino Acids," by H. Kleerekoper and J. A. Mogensen, article, Zeitschrift fur Vergleichende Physiologie, vol. 42, 1959, pp. 492-500, printed in English. Zeitschrift fur Vergleichende Physiologie, Springer-Verlag, Neuheimer Landstr. 24, (17 a) Heidelberg, Germany.

"Composition of the Nonprotein-Bound Amino Acids in the Muscles of the River Lamprey," by Ghislaine Duchateau and Marcel Florkin, article, Archives Internationales de Physiologie et Biochemie, vol. 65, 1957, p. 378, printed in French. Archives Internationales de Physiologie et Biochemie, Imprimerie H. Vaillant-Carmanne, S. A., 4 Place Saint-Michel, Liege, Belgium.

AUSTRALIA:

Trawl Fishes of the Great Australian Bight, by I. S. R. Munro and D. E. Kurth, Australian Fisheries Leaflet No. 1, 7 pp., illus., printed. (Reprinted from Fisheries Newsletter, vol. 19, no. 7.) Department of Primary Industry, Division of Fisheries and Oceanography, Canberra, Australia.

BACTERIOLOGY:

"Bacteriology for Frozen Food Processors," article, Frosted Food Field, vol. 32, February 1961, pp. 51-52, 54-56, printed. Frosted Food Field, Inc., 321 Broadway, New York 7, N. Y.

BELGIUM:

Rapport Annuel sur l'Evolution de la Flotte de Peche en 1960 (Annual Report of the Status of the Fishing Fleet in 1960), 43 pp., processed in French. Ministere des Communications, Administration de la Marine et de la Navigation Interieure, Brussels, Belgium.

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Bermuda Fisheries Research Program, Final Report, August, 1958, by John E. Bardach, C. Lavett Smith, and D. W. Menzel, 64 pp., illus., printed. Bermuda Trade Development Board, Hamilton, Bermuda, 1958. Deals with the problems of whether and how a developing Bermuda fishing industry can satisfy the demands of a relatively large permanent population and an even larger number of visitors annually. The section on the present status of the fishery covers fishing grounds, fish stocks, methods of catching and marketing fish and shellfish, and their food value. The section on the future of Bermuda's fishery discusses unexploited resources--flying fish, snappers, and rough fish; and proposed organization of the fishery--subsidy, management practices, fishing centers, distribution, mechanization of vessels and gear, and biological research. Includes statistical tables showing results of red snapper test fishing, 1956/57; data on experiments with fish attractant; and organization of the fisheries on several Caribbean Islands.

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An Annotated Bibliography on the Uses of Statistics in Ecology--A Search of 31 Periodicals, by Vincent Schultz, TID-3908, 320 pp., processed, $3. Office of Technical Information, U. S. Atomic Energy Commission, Washington, D. C., 1961. (For sale by the Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C.)

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"Determination of Oxalic Acid in Fish Muscle," by Yoshitaka Yamazoe, article, Kagaku (Tokyo), vol. 29, 1959, p. 468, printed in Japan. Kagaku, Iwanami Shoten 2-3, Kanda-hitotsu bashi, Chiyoda-ku, Tokyo, Japan.

"Quantitative Determination of Glycogen and Lactic Acid in Fish Meat," by Janina Trawinska, article, Annales Universitatis Mariae Curie-Sklodowska Lublin-Polonia, Section DD, vol. 12, 1959, pp. 41-63, printed in Polish with English summary. Uniwersytet Marii Curie-Sklodowskiej Bivro Wydawnictw, Plac Stalinas, Lublin, Poland.

BIOLOGICAL RESEARCH:

"Connection Between Maturity, Size, and Age in Fishes," by Gunnar Alm, article, Report No. 40, 1959, pp. 5-145, printed in Swedish. Fishery Board of Sweden, Institute of Freshwater Research, Drottningholm, Sweden.

BRITISH GUIANA:

Onverwagt Brackish-water Fish Culture Station, British Guiana, 1960, Bulletin No. 3, 58 pp., illus., printed, BG$1.00 (59 U. S. cents). Fisheries Division, Department of Agriculture, Georgetown, British Guiana, November 22, 1960. The establishment of an experimental and demonstration station for brackish-water fish culture was recommended by the International Bank for Reconstruction and Development in its report on the economic development of British Guiana in the early 1950's. The present report contains

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descriptions of the facilities and activities of the station, completed in 1959. The research program includes chemical and physical studies of water; and biological studies such as daily collections of fish fry and larvae and research on growth rates and ecological problems. The report also discusses operation of a smokehouse; fishing gear in use at the Station; and such problems as silting, control of predators, shrimp cultivation, and plankton blooms.

CALIFORNIA:

California Fish and Game, vol. 47, no. 3, July 1961, 75 pp., illus., printed, single copy 75 cents. California Fish and Game, 987 Jedsmith Dr., Sacramento 19, Calif. (For sale by the Printing Division, Documents Section, Sacramento 14, Calif.) Includes, among others, articles on: "Survival, Mortality and Movements of White Catfish and Brown Bullheads in Clear Lake, California," by George W. McCammon and Charles M. Seeley; "The Use of the Sediment Bottle Collector for Monitoring Polluted Marine Waters," by Donald J. Reish; "Age and Length Composition of the Sardine Catch Off the Pacific Coast of the United States and Mexico in 1958-59," by Robert S. Wolf and Anita Daugherty; and "The Distribution of the California Sea Otter," by Richard A. Boolootian.

CANADA:

Fisheries Statistics of Canada, 1959 (Ontario, Prairie Provinces, and Northwest Territories), 70 pp., printed in French and English, C$1. Queen's Printer and Controller of Stationery, Ottawa, Canada, July 1961. Contains tables giving the value of the principal species of inland fish landed, 1952-59; quantity and value of landings by species and fisheries districts, 1958-59; capital equipment used in the primary fisheries operations; and the number of persons engaged in the fisheries. This information is presented separately for the provinces of Ontario, Manitoba, Saskatchewan, Alberta, and the Northwest Territories.

Journal of the Fisheries Research Board of Canada, vol. 18, no. 3, May 1961, 184 pp., illus., printed. Queen's Printer and Controller of Stationery, Ottawa, Canada. Contains, among others, these articles: "Spoilage of Fish in the Vessels at Sea. 7--Further Studies on Seasonal Variations in the Landed Quality of Gutted, Trawler-Caught Atlantic Cod and Haddock," by C. H. Castell and Jacqueline G. Giles; "Grading Fish for Quality. 4--Variations in the Relation between Trimethylamine Values and Grades for Gutted, Trawler-Caught Atlantic Cod and Haddock," by C. H. Castell, Maxine F. Elson, and Jacqueline G. Giles; "Observations on Post Mortem Biochemical Changes in Fish Muscle in Relation to Rigor Mortis," by N. Tomlinson and others; "Variability in Aerial Counts of Spawning Salmon," by Donald E. Bevan; "Preparation of Deoxynucleosides, Purine and Pyrimidine Bases and Deoxyribose 1-Phosphate from Deoxyribonucleic Acid Employing Salmon Enzyme Systems," by Abdul Mannan and H. L. A. Tarr; "A Comparison of Three Methods of Inactiviating Lobster Claws," by D. G. Wilder and D. W. McLeese; "Dietary Marine Fish Oils and Cholesterol Metabolism. 3--The Comparative Hypocholesterolemic Activities of Fish Oil and Vitamin A." by J. D. Wood and J. Topliff; "Radioactive Iron as a Fish Mark," by D. P. Scott; "Plasma Proteins of Coho Salmon, Oncorhynchus kisutch, as Separated by Zone Electrophoresis," by W. E. Vanstone and F. Chung-Wai Ho; "Influence of Size upon the Adaptation of Steelhead Trout (Salmo gairdneri) and Chum Salmon (Oncorhynchus keta) to Sea Water," by Arthur H. Houston; "Comparison of Largest Great Slave Lake Fish with North American Records," by J. J. Keleher; and "The Lake Trout of Lac la Ronge, Saskatchewan," by D. S. Rawson.

CANNING:

"Rapid Method for Determination of Tin in Canned Fish Products," by G. S. Akchurina and A. I. Cherkesov, article, Trudy Astrakhanskogo Teknicheskogo Instituta Rynoi Promyshlennostia i Khozyaistva, no. 5, 1958, pp. 147-154, printed in Russian. Izdanie Teknicheskogo Instituta, Rybnoi Promyshlennosti i Kohozyaistvo Astrakhan, U. S. S. R.

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"Black Discoloration of Cans Containing Fish and Shellfish," by Kisaku Yamada and Mizuho Tanaka, article, Seikai-ku Suisan Kenkyusho Kenkyu, Hokoku, no. 17, 1959, pp. 1-13, printed in Japanese with English summary. Suisan-cho Seikai-ku, Suisan Kenkyusho, Marvo-Machi Nagasaki-shi, Japan.

CAVIAR:

"Slow Death Faces Russian Caviar Trade," article, Business Week, no. 1664, July 22, 1961, pp. 122-124, illus., printed. Business Week, McGraw-Hill Publishing Co., Inc., 330 W. 42nd St., New York 36, N.Y. Tells how nature, new hydro-power stations and irrigation projects, cutthroat Russian poachers, and river pollution are threatening the extinction of sturgeon in Soviet waters. Also includes data on the rise of sturgeon prices, competition in the caviar market, and Russia's limited hopes and plans for the future of the sturgeon fishing industry.

CHEMICAL CONTENT:

A Convenient Arrangement for the Determination of Trimethylamine in Fillets, by P. L. Hoogland, New Series Circular No. 3, 10 pp., illus., processed. Fisheries Research Board of Canada, Technological Station, Halifax, Nova Scotia, Canada, March 1956.

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"La Industria Pesquera Chilena" (The Chilean Fishing Industry), article, Puntal, vol. 8, no. 87, June 1961, pp. 16-19, illus., printed in Spanish. Puntal, 21 San Fernando, Alicante, Spain.

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"A Comparison of the Acid-Soluble Collagens from the Skin and Swim Bladder of the Cod," by E. Gordon Young and J. W. Lorimer, article, Archives of Biochemistry and Biophysics, vol. 92, January 1961, pp. 183-190, printed. Archives of Biochemistry and Biophysics, Academic Press Inc., 111 5th Ave., New York 3, N. Y.

"Merkeforsok pa Brisling i Fjordene Sor for Bergen i Juni-September 1960" (Tagging of Cod in the Bay South of Bergen, June-September 1960), by Kaare R. Gundersen, article, Fiskets Gang, vol. 47, no. 22, June 1, 1961, pp. 425-426, illus., printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

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COMMISSIONS:

Thirteenth Annual Report of the Pacific Marine Fisheries Commission for the Year 1960, 60 pp., illus., printed. Pacific Marine Fisheries Commission, 741 State Office Bldg., 1400 SW. 5th Ave., Portland 1, Oreg. Reports briefly the specific activities of the Pacific Marine Fisheries Commission during 1960 and presents a review of long-term developments in the fields of research, regulation, and coordination. Recommends that Congress set aside the Salmon River of Idaho, tributary of the Snake River, as a sanctuary for fish. Presents sections on commercial and sport salmon fisheries, the otter-trawl fishery, the Pacific Coast crab industry, and the shrimp and albacore fisheries. Also includes results of research on English and petrale sole, salmon tagging, and comparative hooking mortality between treble and single hooks.

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"Inorganic Chemical Constituents of Sea Fishes," by Noboru Imanishi, article, Records of Oceanographic Works in Japan, Spec. no. 3, 1959, pp. 135-139, printed. Japanese National Commission for UNESCO, 4-3 Kasumigaseki, Chiyoda-ku, Tokyo, Japan.

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"A Preliminary List of the Fishes Found in the Fresh Waters of Connecticut," by Robert J. Behnke and Ralph M. Wetzel, article, Copeia, no. 2, June 29, 1960, pp. 141-143, printed. American Society of Ichthyologists and Herpetologists, 34th St. and Girard Ave., Philadelphia 4, Pa.

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Fish Boxes--The Use of Timber Compared with Other Materials, by H. Richardson, Industrial Research Study G/IRS/1, 11 pp., processed, 3s. 6d. (about 49 U. S. cents). The Timber Development Association Ltd., 21 College Hill, London EC4, England, October 1959. The advantages and disadvantages of various types of fish boxes are considered in this study. Wood is compared with aluminum, plastics, and other materials. Reference is made to tests carried out in the United Kingdom on a number of fish boxes and lined crates. The results of those tests showed that the most practical type of container in use was the Hull liner crate, consisting of an aluminum lining inside a wooden crate.

CONTINENTAL WATERS:

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Les Premiers Observations Hydrologiques et Biologiques Cotieres Effectuees le Long des Cotes Dahomeennes (Preliminary Hydrological and Biological Coastal Observations Along the Coasts of Dahomey), by L. Vincent-Cuaz, 47 pp., illus., processed in French. Ministere de l'Agriculture, Centre d'Etudes Scientifiques et Techniques Appliquees a la Peche, Cotonou, Dahomey, French West Africa.

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"EFTA: A Current Review," by C. L. Bland, article, Foreign Trade, vol. 116, no. 1, July 1, 1961, pp. 8-9, printed. Foreign Trade, Queen's Printer, Government Printing Bureau, Ottawa, Canada. Since the Stockholm Convention setting up European Free Trade Association (EFTA) was ratified 14 months ago, the Association has taken a number of steps in addition to tariff reductions, which are outlined in this review.

EXPLORATORY FISHING:

"Soviet Scientific Fish-Locating Expedition in Waters of Western Africa and Outlook for Fisheries in This Area," by V. A. Borodatov and IU. L. Karpechenko, article, Trudy Soveshchaniia, no. 10, 1960, pp. 131-138, printed in Russian. Trudy Soveshchaniia, Akademiia Nauk SSSR, Ikhtiologicheskaia Komissiia, Moscow, U.S.S.R.

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"The Development of Schooling Behavior in Fishes," by Evelyn Shaw, article, Physiological Zoology, vol. 33, no. 2, 1960, pp. 79-86, printed. Physiological Zoology, University of Chicago Press, 5750 Ellis Ave., Chicago 37, Ill.

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Traite de Pisciculture (Dissertation on Fish Culture), by Marcel Huet, 380 pp., illus., printed in French. Editions CH. de Wyngaert, Ave. Georges Henri, 296, Brussels 15, Belgium, 1960.

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"Modern Methods of Locating Herring by the Use of Hydroacoustic Apparatus in the North Atlantic in Fall and Winter," by V. G. Azhazha, article, Trudy Soveshchaniia, no. 10, 1960, pp. 219-229, printed in Russian. Trudy Soveshchaniia, Akademiia Nauk SSSR, Ikhtiologicheskaia Komissiia, Moscow, U.S.S.R.

"Use of Hydroacoustic Fish-Locating Techniques in the North Atlantic," by K. I. Iudanov, article, Trudy Soveshchaniia, no. 10, 1960, pp. 230-234, printed in Russian. Trudy Soveshchaniia, Akademiia Nauk SSSR, Ikhtiologicheskaia Komissiia, Moscow, U.S.S.R.

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Utilization of Fish Liver Residues, by C. Gunasekera, Contribution No. 3, 4 pp., printed. (Reprinted from Proceedings of the Indo-Pacific Fisheries Council, 8th Session, Section II, 1958, pp. 89-92.) Fisheries Research Station, Colombo, Ceylon.

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Future Developments in the Production and Utilization of Fish Meal--Vol. I (Report of the International Meeting on Fish Meal, FAO, Rome, 20-29, March 1961), 38 pp., processed. Included are Appendix A--Officers of the Meeting, 2 pp.; Appendix B--The World Outlook for Fish Meal, 58 pp.; Appendix C--Fish Meal Production and Trade in the World, 67 pp.; Appendix D--Nutritional Aspects of Importance in the Analysis of the Market for Fish Meal, 31 pp.; Appendix E--Present-Day Use of Fish Meal and Autolysates as Livestock and Poultry Feed, 8 pp.; Appendix F--World Fish Meal Production and Trade, 47 pp.; Appendix G--The Medium-Term Outlook for Demand and Production of Pigmeat, Poultry Meat and Eggs in the Major Producing Areas, 3 pp.; Appendix H--Edible Fish Flour, 12 pp.; Appendix I--Addendum to Appendix H--Edible Fish Flour, 5 pp.; Appendix J--Report of Working Party on Specifications for Fish Protein Concentrate (Committee B), 4 pp.; Appendix K--Selected Aspects of Existing Plants Producing Fish Protein Concentrates, Fish Flour, Fish Meal for Human Consumption, 4 pp.; Appendix L--Edible Fish Meal and Fish Flour: Suggestions for International Action, 9 pp.; Appendix M--Statistical Tables, 11 pp.; Appendix N--List of Participants and Secretariat, 19 pp.; and Appendix O--List of Documents, 4 pp., Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy.

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"Preparation of a Coating Material by Chlorination of Fish Oil. VIII--Polymerization of Fish Oil With DI-T-Butyl Peroxide," by Kosaku Suzuki, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 26, August 1960, pp. 835-838, printed in Japanese with English summary. Japanese Society of Scientific Fisheries, 6-chome, Shiba Kaigandori, Minato-ku, Tokyo, Japan.

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"Productivity of the Sea and Fresh Water," article, Nature, vol. 188, October 8, 1960, pp. 91-94, printed. Nature, St. Martin's Press, Inc., 175 Fifth Ave., New York 10, N. Y.

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Chesapeake Bay Fishing Harbors Economic Study, Maryland and Virginia, 347 pp., illus., processed. Corps of Engineers, U. S. Army, Board of Engineers for Rivers and Harbors, 2nd and Q Sts. SW, Washington 25, D. C., January 1961. The planning and construction of harbors and channels to serve the commercial fisheries of Chesapeake Bay, Maryland, and Virginia, is a part of the water resources development responsibility of the U. S. Corps of Engineers. The primary purpose of this study is to serve as an aid in preparation of future survey reports concerning specific localities, to determine whether additional harbor and channel improvements are economically justified. Contains basic information on the nature and magnitude of the commercial fishery activities to be served and on the harbors and channels available for this purpose. Includes data relative to biological, technological, and marketing aspects of the fisheries. Presents information as to costs and effects of harbor improvements already accomplished. Much of the data, not previ-

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ously available, was obtained directly from watermen and others engaged in fishery activities, by means of standardized questionnaires and personal field interviews.

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"The Growth, Breeding Cycle and Food of the Flyingfish Parexocoetus brachypterus hillianus (Gosse)," by John B. Lewis, article, Bulletin of Marine Science of the Gulf and Caribbean, vol. 11, no. 2, 1961, pp. 258-266, illus., printed. Marine Laboratory, University of Miami, #1 Rickenbacker Causeway, Miami 49, Fla.

Recent Developments in the Barbadian Flying Fish Fishery and Contributions to the Biology of the Flying-Fish HIRUNDICHTHYS AFFINIS (Gunther 1866), by D. N. F. Hall, Fishery Publications No. 7, 41 pp., illus., printed. Colonial Office, The Church House, Great Smith St., London SW1, England, 1955.

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Report on the FAO Technical Meeting on Credit for Fishery Industries, Paris, 17-22 October 1960, by R. Hamlish, 79 pp., processed. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy.

The Food and Agriculture Organization has published reports describing that Agency's activities under the Expanded Technical Assistance Program for developing the fisheries of many countries. These reports have not been published on a sales basis, but have been processed only for limited distribution to governments, libraries, and universities. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy.

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Report to the Government of Burma on the Development of Food Research and Food Industry in Burma, by H. Wittfogel, FAO Report No. 1378, 30 pp., 1961.

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"Pour l'Approvisionnement du Marche Metropolitain: Necessite d'un Juste Equilibre Entre le Germon et l'Albacore" (Supplying the Home Market: Need for a Balance Between Yellowfin and Albacore); La Situation de la Conserverie sur le Marche du Thon (The Tuna Market and the Status of the Canning Industry), by A. de Torquat; "Le Comite du Thon a Fait Preuve de Sagesse en Reconduisant le Systeme de l''Eventail des Prix'" (Tuna Committee Proves the Wisdom in Renewing the System of a Price Range); "La Campagne de Prospection Thoniere du Navire Oceanographique Thalassa de l'Institut Scientifique et Technique des Peches Maritimes" (Tuna Exploratory Cruise of the Oceanographic Vessel Thalassa of the Scientific and Technical Institute of Maritime Fisheries); and "Le Rapport de l'Expedition Oceanographique Norvegienne Devant les Cotes de l'Afrique Occidentale" (The Report of the Norwegian Oceanographic Expedition Along the Coasts of Western Africa), articles, La Peche Maritime, vol. 40, no. 1,000, July 1961, pp. 497-500, 502-511, illus., printed in French. La Peche Maritime, 190 Blvd. Haussman, Paris, France.

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FREE TRADE ASSOCIATIONS:

"Latin American Free Trade Association Now in Operation," by A. J. Poirier, article, Foreign Commerce Weekly, vol. 66, no. 2, July 10, 1961, pp. 25, 42, printed, single copy 30 cents. U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) The Latin American Free Trade Association, established under a treaty signed by Argentina, Brazil, Chile, Mexico, Paraguay, Peru, and Uruguay at Montevideo on February 18, 1960, and ratified on May 2, 1961, by all countries except Paraguay, is now legally in operation for the 6 countries which have deposited their instruments of ratification. At the 9th session of the United Nations Economic Commission for Latin America (ECLA), held in Santiago, Chile, May 4-15, much of the work related to the achievements of and plans for LAFTA and advent of the Central American Common Market.

FREEZE-DRYING:

"Freeze-Dries for World Market," article, Food Engineering, vol. 33, no. 7, July 1961, pp. 37-39, illus., printed, single copy $1. Food Engineering,

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Chilton Company, Chestnut and 56th Sts., Philadelphia 39, Pa. An Irish firm has recently commenced operation of a $700,000 plant for freeze-drying meats, fish, vegetables, and fruits. This article explains in detail the process used at that plant. Since the weight of the finished products is only a fraction of that of the food before freezing, economy in shipping is expected to compensate for the relatively high processing cost. Other advantages of freeze-dried foods are palatableness and long-keeping quality.

FROZEN FISH:
La Peche Maritime, vol. 40, no. 999, June 1961, 164 pp., illus., printed in French. La Peche Maritime, 190, Boulevard Haussmann, Paris, France. A special issue, devoted to frozen fish, includes, among others, the following articles: "La Congelation et Ses Limites" (Freezing and Its Limitations), by L. Soublin, and "Progres de la Vente du Poisson Surgele en France" (Progress in the Sale of Frozen Fishery Products in France), by A. Kiener. Also contains, under the heading of "foreign," articles on: "Le Developpement de l'Industrie du Poisson Surgele en Allemagne" (The Development of the Frozen Fish Industry in Germany), by Walter W. Schwedke; "Production, Distribution et Consommation du Poisson Surgele en Norvege" (Production, Distribution, and Consumption of Frozen Fish in Norway), by Rolf Kirkvaag; "Organisation du Marche du Poisson Surgele en Belgique" (Organization of the Frozen Fish Market in Belgium), by A. Verhavert; "Essor de la Vente du Poisson Surgele en Grande-Bretagne" (Soaring of Frozen Fish Sales in Great Britain), by G. B. Butcher; and "La Chaine du Froid et le Commerce du Poisson Surgele en Italie" (The Cold Chain and the Frozen Fish Trade in Italy), by Cesare de Felip. In addition, includes several articles under the headings "Freezing at Sea," "Transportation," and "Selling."

FROZEN FOODS:
"Frozen Precooked Foods Need Special Sanitation Care," by F. S. Thatcher, article, Food in Canada, vol. 20, 1960, pp. 24-27, printed. Food in Canada, Maclean-Hunter Publishing Co. Ltd., 481 University Ave., Toronto 2, Canada.

GATT:
"The General Agreement on Tariffs and Trade: An Article-by-Article Analysis in Layman's Language," by Honore M. Catudal, article, The Department of State Bulletin, vol. 44, no. 1148, June 26, 1961, pp. 1010-1020; vol. 45, no. 1149, July 3, 1961, pp. 35-42, printed, single copy 25 cents. Office of Public Services, Bureau of Public Affairs, U. S. Department of State, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Printing Office, Washington 25, D. C.) In an introductory statement, the author explains the organization of the General Agreement on Tariffs and Trade (GATT), its genesis and development, the trade agreements authority, and the structure of the General Agreement and the Protocol of Provisional Application. There follows a short explanation of each of the 35 articles of the GATT. There are now 39 countries which are full contracting parties to the Agreement. The schedules of tariff concessions include about 60,000 items in the tariff classifications of the contracting parties and cover more than half of the world's total foreign trade.

GERMAN FEDERAL REPUBLIC:
Jahresfischfachheft 1960 zur 2. Fischwirtschafts-Ausstellung in Kiel (The 1960 Yearly Issue on Fisheries, prepared for the Second Exhibition on Fishery Economics, Held at Kiel, June 18-26, 1960), 74 pp., illus., printed in German, DM 3 (about 75 U. S. cents). Fette, Seifen, Anstrichmittel, Industrieverlag von Hernhaussen K. G., Rodingsmarkt 24, Hamburg 11, Germany.

GULF OF MEXICO:
Gulf Research Report, vol. 1, no. 1, April 1961, 61 pp., illus., printed. Gulf Coast Research Laboratory, Ocean Springs, Miss. The first issue of a new journal devoted primarily to publication of data on marine sciences, chiefly of the Gulf of Mexico and adjacent waters. Contains an article, "The Marine and Brackish Water Mollusca of the State of Mississippi," by Donald R. Moore.

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"Biological Characteristics and Conditions for the Use of Purse Seines in North Atlantic Herring Fisheries," by B. P. Manteifel' and L. A. Chaianeva, article, Trudy Soveshchaniia, no. 10, 1960, pp. 98-105, printed in Russian. Trudy Soveshchaniia, Akademiia Nauk SSSR, Ikhtiologicheskaia Komissiia, Moscow, U.S.S.R.

"Comparative Economic Effectiveness of Basing the North Atlantic Herring Fleet on Northern and Baltic Ports," by M. P. Es'kova, article, Trudy Soveshchaniia, no. 10, 1960, pp. 245-248, printed in Russian. Trudy Soveshchaniia, Akademiia Nauk SSSR, Ikhtiologicheskaia Komissiia, Moscow, U.S.S.R.

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"Present State of Atlanto-Scandinavian Herring Stocks and Outlook for Their Fisheries," by IU. Marti, article, Trudy Soveshchaniia, no. 10, 1960, pp. 47-58, printed in Russian. Trudy Soveshchaniia, Akademiia Nauk SSSR, Ikhtiologicheskaia Komissiia, Moscow, U.S.S.R.

"Specific Features and Characteristics of Commercially Important Fall and Winter Concentrations of the Atlanto-Scandinavian Herring," by I. G. Iudanov, article, Trudy Soveshchaniia, no. 10, 1960, pp. 59-65, printed in Russian. Trudy Soveshchaniia, Akademiia Nauk SSSR, Ikhtiologicheskaia Komissiia, Moscow, U. S. S. R.

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"The Effect of Storage Temperature and Antioxidant Treatment on the Chemical and Nutritive Characteristics of Herring Meal," by B. E. March, J. Biely, and C. Goudie, article, Journal of the American Oil Chemists' Society, vol. 38, February 1961, pp. 80-84, printed. American Oil Chemists' Society, 35 E. Wacker Dr., Chicago 1, Ill.

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Preliminary Report on the Marine Fisheries of Honduras, by C. P. Idyll and William Saenz, 24 pp.,

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List of Vessels over 50 Gross Tons Fishing in the ICNAF Convention Area in 1959, Serial No. 781, printed. International Commission for the Northwest Atlantic Fisheries, Forrest Bldg., Carleton St., Halifax, N. S., Canada, 1961. Presents a summary of number and tonnage of vessels over 50 tons fishing in the Northwest Atlantic Fisheries Convention Area in 1959, by country and type of vessel. The number of vessels increased from 799 in 1953 to 872 in 1956, and to 1,162 in 1959. The increase in tonnage was even larger. The greater number and tonnage of vessels reported was caused by several new countries having begun to fish in the Area since 1956 and by the more detailed information on the vessels submitted in 1959. Otter trawls are by far the most common gear used in the Area. Of the 14 countries reporting, 8 have used otter trawls exclusively. In the case of only 3 countries (Denmark, Norway, and Portugal), the other vessels (liners and dories) predominate. The term "liner" applies mainly to long-liners but also to a few hand-liners.

(North Pacific Fur Seal Commission) Annual Report for the Fiscal Year Ending June 30, 1959, 83 pp., processed. Secretary, North Pacific Fur Seal Commission, Department of the Interior, Washington 25, D. C., January 1960.

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"The Italian Market for Fish," by M. S. Strong, article, Foreign Trade, vol. 116, no. 3, July 29, 1961, pp. 20-22, printed, single copy 20 Canadian cents. Foreign Trade, Queen's Printer, Government Printing Bureau, Ottawa, Canada. Despite policies designed to increase domestic production, Italy must import large quantities of fish to meet demands of a growing population. This article discusses official policies on the fisheries, the importance of the cooperatives in the industry, the distribution and consumption of fresh and frozen fish and shellfish, the effect of the Common Market on tariffs, and opportunities for expansion of the fishery products market by foreign firms. Includes the common external tariff rates on fish imports into EEC countries.

JAPAN:
Survey of Market Conditions and Principal Fishery Products Prepared by the Fishery Agency, 76 pp., printed in Japanese. Fisheries Agency, Ministry of Agriculture and Forestry, Kasumigaseki, Chiyodaku, Tokyo, Japan.

Technical Report of Fishing Boat, no. 15, 161 pp., illus., printed in Japanese with English abstracts. Fishing Boat Laboratory, Production Division, Fisheries Agency, Ministry of Agriculture and Forestry, Kasumigaseki, Chiyodaku, Tokyo, Japan, March 1961.

LABRADOR:
Labrador Fishing, Laboratory Leaflet No. 26, 9 pp., illus., processed. Ministry of Agriculture, Fisheries and Food, Fisheries Laboratory, Lowestoft, England, January 1961.

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Yellow Discoloration in Frozen Lobster Meat, by W. J. Dyer and D. C. Horne, New Series Circular No. 2, 6 pp., illus., processed. Fisheries Research Board of Canada, Atlantic Fisheries Experimental Station, Halifax, Nova Scotia, Canada, June 1953.

MARINE FUNGI:
Thalassiomycetes. I--Principles of Delimitation of the Marine Mycota With the Description of a New Aquatically Adapted Deuteromycete Genus, by Royall T. Moore and Samuel P. Meyers, Contribution No. 295, 6 pp., illus., printed. (Reprinted from Mycologia, vol. 51, no. 6, November-December 1959, pp. 871-876.) Marine Laboratory, University of Miami, #1 Rickenbacker Causeway, Miami 49, Fla.

MARKETING:
Food is a Bargain, Marketing Bulletin No. 18, 14 pp., illus., printed, 10 cents. Marketing Economics Division, Economic Research Service, U. S. Department of Agriculture, Washington, D. C., May 1961. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Presents, in booklet form, the story of food economics from farmer to consumer. It describes the changes that took place in our food bill between 1947-49 and 1960--and what happens today to the money we spend in the market for foods produced on American farms. Illustrated with cartoon drawings and printed in large type, this bulletin will be of special interest to students.

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MIDWATER TRAWLING:
"Experimental Fishing for Herring with Midwater Trawls in the North Atlantic by Vessels of the SRT Type," by B. S. Solov'ev and A. A. Degtiarev, article, Rybnoe Khoziaistvo, vol. 34, 1958, pp. 21-25, printed in Russian. Rybnoe Khoziaistvo, VNIRO Glavniproekta, pri Gosplanie SSSR, Moscow, U.S.S.R.

NORWAY:
"Fiskernes Arsinntekter i 1959" (Annual Report on Fishermen in 1959), by Georg Oppedal, article, Fiskets Gang, vol. 47, no. 21, May 25, 1961, pp. 402-413, printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

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"Biology of Rosefish and Outlook for Its Fisheries in Seas of the North Atlantic," by V. I. Travin, article, Trudy Soveshchaniia, no. 10, 1960, pp. 125-230, printed in Russian. Trudy Soveshchaniia, Akademiia Nauk SSSR, Ikhtiologicheskaia Komissiia, Moscow, U.S.S.R.

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Studies of Luminescent Flashing in Phosphorescent Bay, Puerto Rico, and in the Gulf of Naples Using a Portable Bathyphotometer, by George L. Clarke and Lloyd R. Breslau, Contribution No. 1090, 35 pp., illus., printed in English with French summary. (Reprinted from Bulletin de L'Institut Oceanographique, Monaco, no. 1171, March 4, 1960.) Woods Hole Oceanographic Institution, Woods Hole, Mass.

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Commercial Fishing Laws, State of Oregon, 1959-1960, 180 pp., printed. Oregon Fish Commission, 307 State Office Bldg., 1400 SW. 5th Ave., Portland 1, Oreg. A compilation of the laws of the State of Oregon relating to the protection and propagation of fish and shellfish. Contains chapters on application, administration, and enforcement of commercial fishing laws; compacts with other states; and licenses and pass books. Also includes sections on general protective regulations; local and special regulations; and regulations pertaining to the packing of fish and manufacture of fishery products.

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"Plant Shells for Oysters," by Ednard Waldo, article, Louisiana Conservationist, vol. 13, nos. 7-8, July-August 1961, pp. 10-12, illus., printed. Louisiana Conservationist, Wild Life and Fisheries Bldg., 400 Royal St., New Orleans 16, La. The author describes how shells, which are sprayed hydraulically from barges, are planted in scientifically located areas where there are firm enough bottoms to sustain their weight and where the proper environment for oyster growth has been established.

"Les Prodissoconques (Coquilles Larvaires) des Ostreides Vivants" (The Hinges--Larval Shells--of Living Oysters), by Gilbert Ranson, article, Bulletin de L'Institut Oceanographique, no. 1183, June 7, 1960, pp. 1-41, illus., printed in French with English summary. Bulletin de L'Institut Oceanographique, Fondation Albert Ier, Prince de Monaco, Monaco.

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"The 1960/61 Survey of Pearling Grounds," by Vernon Wells, article, Fisheries Newsletter, vol. 20, no. 6, June 1961, pp. 25, 27, printed. Fisheries Newsletter, Commonwealth Director of Fisheries, Department of Primary Industry, Canberra, Australia.

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"Pollutional Effects of Organic Insecticides," by Clarence M. Tarzwell, article, Transactions of the 24th North American Wildlife Conference, pp. 132-142, printed. Wildlife Management Institute, Wire Bldg., Washington 5, D. C., 1959.

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"Marine Fishes in Philippine Rivers and Lakes," by Albert W. C. T. Herre, article, Philippine Journal of Science, vol. 87, no. 1, 1958, pp. 65-88, printed. Philippine Institute of Science and Technology, Department of Agriculture and Natural Resources, Manila, Philippines.

POLLUTION:

"The Effect of Sulphite Waste Waters on Death of Fish," by E. Marczek and J. Zielinski, article, Gaz, Woda i Technika Sanitarna, vol. 31, 1957, pp. 45-49, printed in Polish. Ul. Czackiego 3/5, Warsaw, Poland.

Pollution-Caused Fish Kills in 1960, Public Health Service Publication No. 847, 22 pp., printed. Public Health Service, U. S. Department of Health, Education, and Welfare, Washington 25, D. C., 1961. The initial summary of the cooperative Federal-State fish kill project shows that in the first 7 months, June-December 1960, a total of 286 reports were received from 36 states showing a total of more than 6 million fish killed. Industrial wastes were the number one killer, with agricultural poisons lagging far behind. This report discusses in detail the method used in handling data, the type of coverage, the data obtained, sources of pollution, other information submitted, general evaluation of the findings, and a sampling of respondents' comments. Included are a sample of the questionnaire used and statistical tables compiled from data obtained in the survey.

Pollution Problems Along the Gulf Coast, by Gordon Gunter, 5 pp., printed. (Reprinted from Transactions of the Second Seminar on Biological Problems in Water Pollution, April 20-24, 1959, Cincinnati, Ohio.) U. S. Public Health Service, Department of Health, Education, and Welfare, Washington 25, D. C.

"A Review of the Literature of 1958 on Sewage Waste Treatment, and Water Pollution," by H. Heukelekian and others, article, Sewage and Industrial Wastes,

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vol. 31, no. 7, 1959, pp. 763-803, printed. Federation of Sewage and Industrial Wastes Associations, 4435 Wisconsin Ave. NW., Washington 16, D. C.

PORTUGAL:

Boletim da Pesca, vol. 13, no. 71, June 1961, 118 pp., illus., printed in Portuguese. Boletim da Pesca, R. S. Bento, 644, 4°-Esq., Lisbon, Portugal. Contains, among others, the following articles: "Contribuicao para o Conhecimento da Biologia dos Trachurus de Angola" (Contribution to the Study of the Biology of the Trachurus of Angola), by Pedro da Franca and Maria de Lurdes Paes da Franca; and "XVII Congresso das Pescas e Industrias Maritimas, Lorient, 4 a 9 de Octubro de 1960" (XVII Congress on Fisheries and Marine Industries, Lorient, October 4-9, 1960), by J. Le Garrec.

Gremio dos Armadores de Navios da Pesca do Bacalhau, Relatorio e Contas do Exercicio de 1960 e Orcamento para 1961 (Cod Fishing Vessel Owners' Guild, Statement of Operations for 1960 and Budget for 1961), 24 pp., printed in Portuguese. Comissao Revisora de Contas, Lisbon, Portugal, February 18, 1961.

Gremio dos Armadores da Pesca da Baleia, Relatorio e Contas do Exercicio de 1960 e Orcamento para 1961 (Whaling Vessel Owners' Guild, Report of Operations in 1960 and Budget for 1961), 32 pp., illus., printed in Portuguese. Comissao Revisora de Contas, Lisbon, Portugal, March 2, 1961.

Gremio dos Armadores da Pesca da Sardinha, Relatorio e Contas do Exercicio de 1960 e Orcamento para 1961 (Sardine Fishing Vessel Owners' Guild, Statement of Operations for 1960 and Budget for 1961), 20 pp., printed in Portuguese. Comissao Revisora de Contas, Lisbon, Portugal, January 27, 1961.

PRESERVATION:

"Experiences in the Preservation at Sea of Herring for Fish Meal and Oil Industry. I--Drainage before Preservation in Partitioned Fish Holds. II--Use of Preservatives and Results Obtained," by E. Arnesen, article, Fiskaren, vol. 36, 1959, pp. 1, 7, printed in Norwegian. Fiskaren, Norges Fiskarlag, 6 Strandkaien, Bergen, Norway.

PROTEINS:

"Comparison of Physiological Actions of Inactive Protein Crystals Obtained from Crude Tuna-Fish Insulin Powder and Crystalline Glucagon," by Kakuma Nagasawa and others, article Eisei Shikenjo Hokoku, no. 76, 1958, pp. 321-322, printed in Japanese. Kokuritsu Eisei Shikenjo, Yoga, Setagaya-ku, Tokyo, Japan.

Plasma Proteins in the Blood of Fishes from the Gulf of Mexico, by L. L. Sulya, B. E. Box, and Gordon Gunter, 3 pp., illus., printed. (Reprinted from American Journal of Physiology, vol. 200, no. 1, January 1961, pp. 152-154.) American Journal of Physiology, 102 Mezes Hall, University of Texas, Austin, Tex.

"Proteins of Shellfish. VI--Paper-Electrophoretic Behavior of Myosin Fraction of Adductor Muscle of the Clam, Meretrix Meretrix," by Haruo Baba, article, Annual Report of the National Institute of Nutrition, 1959, p. 54, printed. National Institute of Nutrition, Toyamacho, Tokyo, Japan.

RADIOACTIVE WASTE:

"Control of Radioactive Wastes," by A. S. Flemming, article, Public Health Report, no. 74, 1959, pp. 883-884, printed. U. S. Public Health Service, Department of Health, Education and Welfare, Washington 25, D. C.

The Need for Biological Monitoring of Radioactive Waste Streams, by R. F. Foster, Fifth Nuclear Engineering and Science Congress (Cleveland, Ohio, 1959), Preprint V-6, 20 pp., printed. Engineering Joint Council, 29 W. 39th St., New York 18, N. Y.

RADIOACTIVITY:

Radioactive Materials in Food and Agriculture (Report of an FAO Expert Committee, Rome, 30 November-11 December 1959), FAO Atomic Energy Series No. 2, 132 pp., illus., printed, $1.50. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, 1960. (For sale by Columbia University Press, International Documents Service, 2960 Broadway, New York 27, N. Y.)

SAFETY AT SEA:

International Conference on Safety of Life at Sea, 1960 (Final Act of Conference with Annexes Including the International Convention for the Safety of Life at Sea, Signed in London, 17 June, 1960), 513 pp., printed in French and English, £1 1s. (about US$2.95). Her Majesty's Stationery Office, York House, Kingsway, London WC2, England, 1960.

SALMON:

Age of Pink Salmon and the Pattern of Their Fluctuations in Abundance, by A. P. Vedenskii, OTS 60-21150, 114 pp., illus., processed, $1.25. (Translated from Russian, Izvestiya Tikhookeanskogo Nauchno-Issledovatel'skogo Instituta Rybnogo Khozyaistva i Okeanografii, vol. 41, 1954, pp. 111-195.) Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C., 1960.

"Artificial Spawning Channel Studied," article, Outdoor California, vol. 22, no. 6-7, June-July 1961, pp. 16-17, illus., printed. Outdoor California, Department of Fish and Game, 722 Capitol Ave., Sacramento 14, Calif. Describes an artificial spawning channel located in California about four miles below Pardee Dam on the Mokelumne River. Ordinarily, when a dam blocks off a spawning area a hatchery is constructed to mitigate for the loss of the spawning area. "In certain situations," states the author, "it is believed that spawning channels may provide a more efficient and more economical method of salmon culture than hatcheries. Also, fish produced from a channel may have a better survival in the later stages of their life cycle."

"Biochemical Studies on Sockeye Salmon During Spawning Migration. XII--Liver Glycogen," by Violet M. Chang and D. R. Idler, article, Canadian Journal of Biochemistry and Physiology, vol. 38, June 1960, pp. 553-558, printed. Canadian Journal of Biochemistry and Physiology, National Research Council, Ottawa, Canada.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

"Kodiak Bear-Red Salmon Relationships at Karluk Lake, Alaska," by Webster K. Clark, article, Transactions of the 24th North American Wildlife Conference, March 2, 3, and 4, 1959, pp. 337-345, printed. Wildlife Management Institute, Wire Bldg., Washington 5, D. C., 1959.

"A Possible Source of Error in Assessing the Survival of Pacific Salmon Eggs by Redd Sampling," by J. G. McDonald, article, The Canadian Fish Culturist, Issue 26, March 1960, pp. 27-30, printed. The Canadian Fish Culturist, Department of Fisheries of Canada, Ottawa, Canada.

"On the Possibilities of Improving Salmon Spawning Areas," by William F. Royce, article, Transactions of the 24th North American Wildlife Conference, pp. 356-366, printed. Wildlife Management Institute, Wire Bldg., Washington 5, D. C., 1959.

"The Structural Characters of Te Anau Salmon," by G. Stokell, article, Transactions of the Royal Society of New Zealand, vol. 87, nos. 3-4, 1959, pp. 255-263, printed. Royal Society of New Zealand, Wellington, New Zealand.

SALT COD:

A Selected Bibliography of Salt Cod, compiled by Marjorie E. McPhail, New Series Circular No. 5, 35 pp., processed. Fisheries Research Board of Canada, Technological Station, Halifax, Nova Scotia, Canada, June 1957.

SALT CONTENT:

Determination of the Salt Content of Fish (A Simple Apparatus and Procedure), by P. L. Hoogland and H. C. Freeman, New Series Circular No. 4, 10 pp., illus., processed. Fisheries Research Board of Canada, Technological Station, Halifax, Nova Scotia, Canada, April 1957.

SARDINES:

Contribuicoes para o Estudo da Biologia dos "Clupeidae" de Angola. 2--Observacoes Metricas e Meristicas em SARDINELLA EBA C. & V. (Contributions to the Study of the Biology of the Clupeidae of Angola. 2--Quantitative and Qualitative Observations of Sardinella eba C. & V.), by Rui Monteiro, Notas Mimeografadas do Centro de Biologia Piscatoria No. 15, 16 pp., illus., processed in Portuguese. Centro de Biologia Piscatoria, Ministerio do Ultramar, Junta de Investigacoes do Ultramar, Lisbon, Portugal, 1960.

"Contribution a l'Etude Ecologique des Etangs Mediterraneens--Quelques Donnees Sur les Caracteres Morphologiques et Biologiques de la Sardine (Sardina pilchardus Walb.) de l'Etang de Berre" (Contribution to the Ecological Study of Mediterranean Ponds--Data on the Morphological and Biological Characteristics of the Sardine--Sardina pilchardus Walb.--from the Pond of Berre), by D. Schachter, article, Bulletin de L'Institut Oceanographique, no. 1175, March 1960, pp. 1-29, illus., printed in French with English summaries. Bulletin de L'Institut Oceanographique, Fondation Albert 1er, Prince de Monaco, Monaco.

SCALLOPS:

Outlook for the Georges Bank Scallop Fishery, by N. Bourne, General Series Circular No. 33, 2 pp., printed. Fisheries Research Board of Canada, Biological Station, St. Andrews, New Brunswick, Canada, September 1960.

SHELLFISH:

Partial Metamorphosis in ANOMIA SIMPLEX, by V. L. Loosanoff, 1 p., illus., printed. (Reprinted from Science, vol. 133, no. 3470, June 30, 1961, pp. 2070-2071.) American Association for the Advancement of Science, 1515 Massachusetts Ave. NW., Washington 5, D. C.

Recent Advances in the Control of Shellfish Predators and Competitors, by Victor L. Loosanoff, 15 pp., illus., printed. (Reprinted from Proceedings of the Gulf and Caribbean Fisheries Institute, Thirteenth Annual Session, November 1960, pp. 113-127.) Marine Laboratory, University of Miami, #1 Rickenbacker Causeway, Miami 49, Fla. The purpose of this article is to describe briefly several methods of control of shellfish enemies that either came into practical use during recent years or are on the threshold of being employed on a large scale by shellfish industries.

SHRIMP:

Contributions to the Knowledge of the Alpheid Shrimp of the Pacific Ocean. Part V--The Indo-Pacific Members of the Genus ATHANAS; and Part VII--On METABETAEUS Borradaile, with a New Species from Hawaii, by Albert H. Banner and Dora May Banner, 28 pp. and 5 pp., respectively, illus., printed. (Reprinted from Pacific Science, vol. 14, no. 2, April 1960, pp. 129-155; and vol. 14, no. 3, July 1960, pp. 299-303, respectively.) Pacific Science, University of Hawaii, Honolulu 14, Hawaii.

SMALL BUSINESS MANAGEMENT:

Trade Regulation and Small Business, Small Marketers Aid No. 67, 4 pp., processed. Small Business Administration, Washington 25, D. C., June 1961. A report outlining Federal and State trade regulation laws and their application to the small businessman. Government regulation of monopolistic and unfair trade practices directly affects and benefits small business. This report points out certain types of practices which are permitted the businessman and others which are prohibited.

SMOKED FISH:

"Curing Fish by Smoking," article, South Pacific Bulletin, vol. 11, no. 2, April 1961, pp. 32-33, illus., printed, single copy 30 cents. South Pacific Commission, Box 5254 G.P.O., Sydney, Australia.

SOMALI REPUBLIC:

Feasibility Study of Sea Foods Processing in the Somali Republic, 14 pp., processed. Industry Division, USOM/SR, United States Embassy, Mogadiscio, Somali Republic, December 1960. Covers present status of the fishing industry, background information and feasibility of operations, and availability of raw material. Also covers the possibilities of marketing, materials and supplies, and distribution

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of processed spiny lobster tails, shrimp, and fish such as tuna. Included are statistical tables showing costs of vessels and equipment, working capital required, and related data.

SPINY LOBSTERS:

Nova Contribuicao para o Conhecimento das Lagostas do Arquipelago de Cabo Verde (New Contribution to Knowledge of Spiny Lobsters in the Cape Verde Islands), by P. da Franca, M. L. Paes da Franca, and F. Correia da Costa, Notas Mimeografadas do Centro de Biologia Piscatoria No. 19, 43 pp., illus., printed in Portuguese. Centro de Biologia Piscatoria, Junta de Investigacoes do Ultramar, Lisbon, Portugal, 1961. Presents the results of biological studies and experimental fisheries of spiny lobsters in the Cape Verde Islands and supplements the report (No. 6) published in 1959.

Pesca Exploratoria de la Langosta con Nasas, al Sur de Camaguey, Cuba (Exploratory Fishing for Spiny Lobsters with Various Type Pots to the South of Camaguey, Cuba), by R. J. Buesa Mas, Contribucion No. 11 del Centro de Investigaciones Pesqueras, 30 pp., illus., printed in Spanish. Banco de Fomento Agricola e Industrial, Playa Habana, Bauta, Cuba, April 1960.

STANDARDS:

Shellfish Definitions and Standards under the Federal Food, Drug, and Cosmetic Act, F.D.C. Regs., Part 36, 7 pp., printed, 5 cents, reprinted April 1961. Food and Drug Administration, U. S. Department of Health, Education, and Welfare, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) A reprint of the definitions and standards of identity and fill of container for shellfish (canned shrimp, canned oysters, raw oysters, and Pacific oysters) promulgated under the Federal Food, Drug, and Cosmetic Act. The act requires the Secretary of Health, Education, and Welfare to promulgate reasonable definitions and standards for food to promote honesty and fair dealing in the interest of consumers. After a standard goes into effect, it constitutes the official specification for that food for the purposes of enforcement of the act.

SURGEONFISH:

A Contribution to the Biology of the Convict Surgeonfish of the Hawaiian Islands, ACANTHURUS TRIOSTEGUS SANDVICENSIS, by John E. Randall, Contribution No. 301, 58 pp., illus., printed. (Reprinted from Pacific Science, vol. 15, no. 2, April 1961, pp. 215-272.) Marine Laboratory, University of Miami, #1 Rickenbacker Causeway, Miami 49, Fla.

SWEDEN:

Preliminar Fangststatistik over det Svenska Havsfisket Ar 1960 (Preliminary Catch Statistics of the Swedish Marine Fishery, 1960), 10 pp., processed in Swedish. The Royal Statistic Central Bureau, Branch of Agriculture Statistics, Stockholm, Sweden.

TARIFFS:

"Effect of Tariff Changes on the Prices and Volume of Imports," by Mordechai E. Kreinin, article, The American Economic Review, vol. 51, no. 3, June 1961, pp. 310-324, printed, single copy $1.50. The American Economic Association, Curtis Reed Plaza, Menasha, Wis.

TOXICITY:

"Biological Assay of Herbicides for Fish Toxicity," by James T. Davis, article, Weeds, vol. 7, no. 4, 1959, pp. 397-404, printed. Weed Society of America, University of Wisconsin, Madison, Wis.

Concerning Some Principles of the Toxicology of Fish (Sur Quelques Principes de la Toxicologie due Poisson), by K. Wuhrmann, Translation Series No. 243, printed. Fisheries Research Board of Canada, Ottawa, Canada, 1959.

TRADE LISTS:

The Bureau of Foreign Commerce, U. S. Department of Commerce, Washington 25, D. C., has published the following mimeographed trade list. Copies may be obtained by firms in the United States from that office or from Department of Commerce field offices at $1 each.

Fish Processing Companies--Brazil, 4 pp. (July 1961). Lists the names and addresses, size of firms, and types of products handled by each firm. Includes fish and shellfish canneries and freezers.

TRAINING:

"Trainees Build Cutters for SPC Fisheries Course," by H. Van Pel, article, South Pacific Bulletin, vol. 11, no. 2, April 1961, pp. 28-29, 37, illus., printed, single copy 30 cents. South Pacific Commission, Box 5254, G.P.O., Sydney, Australia. The three 25-foot fishing cutters built by trainees at the South Pacific Commission Boatbuilding School at Auki, in the British Solomons, will be used to train participants who will attend the SPC Fisheries Centre, expected to open in that area during 1961. Progress being made at both School and Centre is described in this article.

TRANSFER OF FISH AT SEA:

"Sausages and Fishpots," by J. J. Waterman, article, World Fishing, vol. 10, no. 7, July 1961, pp. 19-20, printed. World Fishing, John Trundell Ltd., St. Richards House, Eversholt St., London NW1, England. In 1960, the Torry Research Station began a series of experiments in the "sausage" and "fishpot" methods of transferring fish at sea. Some of the early results and conclusions of those experiments are summarized here.

TRAWLING:

"Biological Prerequisites and Techniques of Fishing for Herring With Variable-Depth Trawls in the North Atlantic," by M. I. Ryzhenko, article, Trudy Soveshchaniia, no. 10, 1960, pp. 239-242, printed in Russian. Trudy Soveshchaniia, Akademiia Nauk SSSR, Ikhtiologicheskaia Komissiia, Moscow, U.S.S.R.

The Extensive Report of Shrimp Trawl Exploratory Fishing, Report No. 4292-4293, 56 pp., illus., printed in Korean. The Central Fisheries Experiment Station, Office of Marine Affairs, Pusan, Korea.

"Fishing Efficiency of Otter Trawl Aided with a Kite," by Shigene Takayama, article, Indo-Pacific Fisheries Council Proceedings, 8th Session, Colombo, Ceylon, December 6-22, 1958, Section II, pp. 38-41, printed. IPFC Secretariat, FAO Regional Office for Asia and the Far East, Bangkok, Thailand, 1960.

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TROUT:

"Further Observations on the Survival of Yearling Lake Trout Planted in South Bay, Lake Huron," by J. C. Budd and F.E.J. Fry, article, The Canadian Fish Culturist, Issue 26, March 1960, pp. 7-13, printed. Canadian Fish Culturist, Department of Fisheries of Canada, Ottawa, Canada.

Insect Emergence from a Small Trout Loch and Its Bearing on the Food Supply of Fish, by N. C. Morgan and A. B. Waddell, Freshwater and Salmon Fisheries Research no. 25, 41 pp., illus., printed, 12s. 6d. (about US$1.75). Her Majesty's Stationery Office, York House, Kingsway, London WC2, England, 1961.

"New Horizons in Stocking Hatchery Trout," by Paul R. Needham, article, Transactions of the 24th North American Wildlife Conference, pp. 395-407, printed. Wildlife Management Institute, Wire Bldg., Washington 5, D. C., 1959.

TUNA:

Algumas Regras Praticas para a Pesca do Atum com Isco Vivo (Some Practical Rules for the Live Bait Tuna Fishery), by F. Correia da Costa, Notas Mimeografadas do Centro de Biologia Piscatoria No. 18, 19 pp., illus., processed in Portuguese with French and English abstracts. Centro de Biologia Piscatoria, Junta de Investigacoes do Ultramar, Lisbon, Portugal, 1961.

"Chemical Composition of Yellowfin Tuna Meat," by Masayuki Kochi and Shitoku Era, article, Norinsho Suisan Koshusho Kenkyu Hokoku, vol. 8, 1959, pp. 67-71, printed in Japanese. Shimonoseki College of Fisheries, Jamaguchi Prefecture, Yoshimi, Shimonoseki, Japan.

Contribution a l'Etude Biometrique de l'Albacore (Contribution to the Biometric Study of Albacore), by L. Vincent-Cuaz, 107 pp., illus., processed in French. Ministere de l'Agriculture, Centre d'Etudes Scientifiques et Techniques Appliquees a la Peche, Cotonou, Dahomey, French West Africa.

Larvae and Juveniles of Tunas, Sailfishes, and Swordfish (THUNIDAE, ISTIOPHORIDAE, XIPHIIDAE) From the Central and Western Part of the Pacific Ocean, by Sun Tsi-Gen, 21 pp., processed. (Translated from Russian Trudy Institute Okeanologi, vol. 41, pp. 175-191.) Inter-American Tropical Tuna Commission, La Jolla, Calif., 1960.

"Life History Notes on the Little Tuna, Euthynnus alletteratus, from the Southeastern United States," by Donald P. de Sylva and Warren F. Rathjen, article, Bulletin of Marine Science of the Gulf and Caribbean, vol. 11, no. 2, 1961, pp. 161-190, illus., printed. Marine Laboratory, University of Miami, #1 Rickenbacker Causeway, Miami 49, Fla.

"La nouvelle conserverie de thon de la Star-Kist Caribe, a Porto Rico" (The New Star-Kist Caribe Tuna Cannery in Puerto Rico), article, La Peche Maritime, vol. 40, no. 1,000, July 1961, pp. 530-531, 533, illus., printed in French. La Peche Maritime, 190 Blvd. Haussman, Paris, France.

Size and Year Class Composition of Catch, Age and Growth of Yellowfin Tuna in the Eastern Tropical Pacific Ocean for the Years 1954-1958, by Richard C. Hennemuth, 111 pp., illus., printed in English and Spanish. (Reprinted from Inter-American Tropical Tuna Commission Bulletin, vol. 5, no. 1, 1961, pp. 5-112.) Inter-American Tropical Tuna Commission, La Jolla, Calif.

Studies of the Age, Growth, Sexual Maturity and Spawning of Populations of Anchoveta (CETENGRAULIS MYSTICETUS) of the Coast of the Eastern Tropical Pacific Ocean, by Izadore Barrett and Gerald V. Howard, 104 pp., illus., printed in English and Spanish. (Reprinted from Inter-American Tropical Tuna Commission Bulletin, vol. 5, no. 2, 1961, pp. 115-216.) Inter-American Tropical Tuna Commission, La Jolla, Calif.

"Tagging of Skipjack in Hawaiian Waters," by Daniel T. Yamashita and Kenneth D. Waldron, article, Pacific Science, vol. 13, no. 4, 1959, pp. 342-348, printed. Pacific Science, University of Hawaii, Honolulu 14, Hawaii.

TURKEY:

Balik ve Balikcilik (Fish and Fishery), vol. 9, no. 5, May-June 1961, 32 pp., illus., printed in Turkish with English table of contents. Balikcilik Mudurlugu, Besiktas, Istanbul, Turkey. Includes, among others, these articles: "Weight of Our Bonitos for the Last Two Years," by Sadan Barlas; "Agriculture and Industry of Seaweeds," by Fehmi Ersan; "The Biology and Appearance of Mackerels (Part II)," by Huseyin Uysal; and "Of Biological and Hydrodynamic Sounds Emitted by Fish," by Muzaffer Atli.

TURTLES:

"Turtles, Tame and Truculent," by Percy Viosca, Jr., article, Louisiana Conservationist, vol. 13, nos. 7-8, July-August 1961, pp. 5-8, illus., printed. Louisiana Conservationist, Wild Life and Fisheries Bldg., 400 Royal St., New Orleans 16, La. Describes the tortoises, terrapin, and turtles of Louisiana. The diamond-back terrapin and five kinds of sea turtles are of commercial value. Includes a short note on the scientific names and habitats of each of 21 species of Louisiana Turtle.

UNITED KINGDOM:

The Economics of White Fish Distribution in Great Britain, by R. A. Taylor, 253 pp., illus., printed, 30s. (about US$4.25). Gerald Duckworth & Co., Ltd., 3 Henrietta St., London WC2, England, 1960. According to the author, "This study is concerned with the economic aspects of the distribution of white fish in Great Britain. White fish is defined as 'fish (whether fresh or preserved) of any kind found in the sea, except (a) herring, (b) any of the salmon species or (c) any species of trout which migrates to and from the sea' but is more generally understood to cover those varieties which live on or near the sea bed. The primary purpose of the study, however, was not to give a comprehensive description of the organization and methods of white fish distribution, but rather to examine such matters relative to the distribution and consumption of this commodity as appeared to merit special study. Part I is

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essentially descriptive and gives the various trends of white fish landings, consumption and prices and the patterns of fish consumption. Quantitative data on these subjects are necessary for a proper understanding of the forces influencing the present organization of the fish trades, their recent history and possible future developments. Part II describes the structure and organization of the trades and examines the costs of fish distribution and the costs of producing quick-frozen fish. Methods of sale, boxing and transport are also considered, and in the final chapters the demand for white fish at first-hand sales and consumer demand for fish are analyzed."

Sea Fisheries Statistical Tables, 1960, 47 pp., printed, 5s. (70 U. S. cents). Her Majesty's Stationery Office, York House, Kingsway, London WC2, England, 1961. Consists principally of statistical tables showing the quantity, total value, and average value of fish and shellfish production in England and Wales by species, region, and method of capture for 1960. Fish are divided into three main groups: demersal, pelagic, and shellfish. Information of the number of fishermen, vessels, and principal ports are given. Data on foreign trade in fishery products are also shown.

White Fish Authority, Tenth Annual Report for the Year ended 31st March, 1961, 54 pp., printed, 3s. (about 42 U. S. cents). Her Majesty's Stationery Office, York House, Kingsway, London WC2, England. Covers the activities and functions of the White Fish Authority for the fiscal year ending March 31, 1961, its income, expenditures, and fishery loans. Also includes sections on production of fishery products, marketing and distribution, research and experiments, training courses, and investigations.

U.S.S.R.:

"Regards sur--Les Peches Sovietiques" (Regarding Soviet Fisheries), by Robert Lenier, article, France Peche, vol. 6, no. 51, May 1961, pp. 11-15, 17, illus., printed in French. France Peche, Tour Sud-Est, Rue de Guemene, Lorient, France.

"Sovjets Havsimperium I" (The Soviet Ocean Empire I), by Georg Borgstrom, article, Svenska Vastkustfiskaren, vol. 31, no. 10, May 25, 1961, pp. 220-221, illus., printed in Swedish. Svenska Vastkustfiskaren, Fiskhannen, Gothenborg V, Sweden. This article will be continued in the next issue.

VESSELS:

"Operating Costs of Small Mechanized Fishing Boats," by Ernest Hess, article, West Indies Fisheries Bulletin, no. 2, pp. 1-8, March-April 1961, processed. Ministry of Natural Resources and Agriculture, Federal House, Port-of-Spain, Trinidad, West Indies. Although mechanization is advantageous for many reasons, many fishermen do not realize that before mechanization can pay its way, considerable additional catches and larger gross profits must be made to pay for the financing and operation of the boat and engine itself. In this article, the economics of fishing vessel operation are explained and suggestions made for record-keeping and cost accounting.

WATER POLLUTION:

Reports on Sulfite Waste Liquor in a Marine Environment and its Effect on Oyster Larvae, Research Bulletin No. 6, 165 pp., illus., processed. State of Washington, Department of Fisheries, Seattle, Wash., December 1960.

WEATHER CHARTS:

Coastal Warning Facilities Charts, 1961, 2 charts, 2 pp. each, processed, 10 cents each, 1961. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Weather Bureau, U. S. Department of Commerce, Washington, D. C. Charts show stations displaying small craft, gale, whole gale and hurricane warnings, explanations of warning displays, and schedules of AM and FM radio, TV, and radiophone stations that broadcast weather forecasts and warnings: 16P--Morgan City, La., to Apalachicola, Fla.; and 17P--Point Conception, Calif., to Mexican Border.

WEST INDIES:

"Fisheries Problems in the West Indies," by E. Hess, article, West Indies Fisheries Bulletin, no. 2, 1960, pp. 1-10, processed. Ministry of Natural Resources and Agriculture, Federal House, Port-of-Spain, Trinidad, West Indies.

"West Indies Fisheries Development 1959/60," by E. Hess, article, West Indies Fisheries Bulletin, no. 1, 1961, pp. 1-3, processed. Ministry of Natural Resources and Agriculture, Federal House, Port-of-Spain, Trinidad, West Indies.

WHALE OIL:

"Deodorization of Liquid Whale Oil in Hydrogen Atmosphere," by T. A. Khorin, article, Masblobino-Zhirovaya Promyshlennost, vol. 25, no. 3, 1959, pp. 34-35, printed in Russian. Masbloboino-Zhirovaya Promyshlennost, Izdatel'stvo Literatury po Pishchevoi, Promyshlennosti, Moscow, U.S.S.R.

WHALES:

"Census of the California Gray Whale, 1959/60," by Dale W. Rice, article, Norsk Hvalfangst-Tidende, vol. 50, no. 6, June 1961, pp. 219-225, illus., printed in Norwegian and English. Hvalfangerforeningen, Sandefjord, Norway.

International Whaling Statistics, no. XLV, 85 pp., printed, Kr. 2,00 (about 28 U. S. cents). The Committee for Whaling Statistics, Oslo, Norway, 1961. A report on the results of the whaling operations in the Antarctic during the season 1958/59 and on grounds outside the Antarctic in the calendar year 1959. Includes statistical tables on whaling in the Antarctic; whaling operations of Norway, the United Kingdom, Japan, and the U.S.S.R; whaling results for various other countries; average size of whales caught; and whales caught by species, sex, and size. Also includes data on average production of oil per "blue-whale equivalent;" average production of oil per sperm-whale; and whale foetuses measured.

International Whaling Statistics, no. XLVI, 56 pp., printed, Kr. 2,00 (about 28 U. S. cents). The Committee for Whaling Statistics, Oslo, Norway, 1961.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

A report on the whaling operations in the Antarctic during the season 1959/60. Includes statistical tables showing whaling in the Antarctic; results for various countries; average size of whales caught; whales caught by species, sex, and size; and average production of oil per blue-whale unit. Also includes data on size of pregnant whale females caught; whale foetuses measured by species and groups of size; and whale foetuses measured by species and sex.

WORLD TRADE:

The following World Trade Information Service Reports, published by the Bureau of Foreign Commerce, U. S. Department of Commerce, Washington, D. C., are for sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., at 10 cents a copy.

Licensing and Exchange Controls, Japan, Operations Report No. 61-27, Part 2, 4 pp., printed, April 1961.

Preparing Shipments to Austria, Operations Report No. 61-31, Part 2, 8 pp., printed, April 1961.

Patent and Trademark Regulations of Uruguay, Operations Report No. 61-34, Part 2, 8 pp., April 1961.

Import Tariff System of Italy, Operations Report No. 61-35, Part 2, 4 pp., printed, May 1961.

Licensing and Exchange Controls, Israel, Operations Report No. 61-37, Part 2, 4 pp., printed, May 1961.

ORIGIN OF PACIFIC SALMON CANNING INDUSTRY

"George and William Hume with their friend A. S. Hapgood were the creators of the Pacific salmon canning industry. The Hume brothers, who had worked as fishermen at their home in Maine, went to California as Forty-niners. They noticed that salmon were plentiful in the Sacramento River and believed that money might be made canning the fish. They went back to Maine on a visit, induced A. S. Hapgood, a lobster canner, to return west with them and the first Pacific salmon pack was made at Sacramento, California, in 1864. The pack was a failure the next year, but conditions were reported to be extremely favorable on the Columbia River, so the Hume firm moved their equipment to Eagle Cliff, Washington, about 40 miles up the river from Astoria and made the first pack of Columbia River salmon in 1866.

"Canned salmon was introduced to England and Germany where the first large market for this product was established by ships loading wheat and lumber for European ports. Canneries became numerous along the Columbia River, and as the sale of canned salmon increased steadily, the industry sought new and profitable locations, first at New Westminster on the Fraser River in British Columbia in 1867; then at Mukilteo, on Puget Sound, Washington Territory, in 1877; and while Alaska is today the most important salmon canning area, its first cannery was not built until 1878 at Klawak, on Prince of Wales Island."

Principles and Methods in the Canning of Fishery Products, Research Report No. 7 (page 3), U. S. Fish and Wildlife Service

USE OF OUTBOARD MOTORS AFFECTS NEITHER FISH NOR WATER

A number of scientific surveys conducted on the lakes, ponds, and reservoirs of several states in the United States, to determine potential sources of pollution, reveal that the use of outboard motors did no harm to the fish, aquatic vegetation, or water purity.

The various surveys included lakes ranging in size from 40 to several thousand acres and involving waters in which heavy concentrations of outboard motors were present. Several investigations were conducted by municipal and private water supply agencies, who hesitated to open the waters to outboard craft until it had been scientifically determined that such use would not result in pollution.

The reports indicate that while there were a few isolated instances in which individual outboards had improper fuel-oil mixtures or minor fuel leaks, these were immediately corrected by the operators for reasons of economy and adequate operation.

The moving propeller of the outboard motor does not seem to be frightening these fish, especially the cobia, which is either making a dash at the propeller, or at the bubbles from the exhaust. Outboard engines do not effect the purity of water nor its aquatic vegetation.

One of the most significant studies on this subject was carried out by Professor Karl Lagler and associates of the Department of Zoology of the University of Michigan, Ann Arbor, Mich. The major purpose of the study was to determine whether the use of outboard motors had an adverse effect upon fish in any respect. This necessitated including any possible effect on aquatic vegetation and on the oxygen and impurity content of the water itself. The potential polluting agent, it was thought, would be oil, fuel, and exhaust gases discharged into the water by motors.

"The opportunity was sought to observe effects of oil and fuel spilled from fueling operations or exhausted from engines in each of the three motor use ponds examined," the report stated. "No visible indications of oil pollution could be discovered, hence its effects could not be studied. It did not appear on marginal or aquatic vegetation, on the many clear pine test strips set in the water near the shore, or on the concrete structures for control of pond levels. If no oil or fuel pollution could be discerned in these small experimental ponds, it is accepted that this is not a matter of concern from normal outboard use in natural waters." In addition, there were no abnormal mortalities of fish in the experimental water.

A survey made by the Water Department of the City of San Diego, Calif., to determine the effect of outboard motors on the water supply reservoirs returned similar findings.

"Throughout the 45 years of recreational use of certain of our water supply reservoirs," the Director reports, "we have not observed or measured a single instance where any degree of pollution from the operation of outboard motors has occurred."

The question of potential pollution arose from the inquiries of various groups that controlled lakes, ponds, and reservoirs, some of limited area, who did not want to open these waters to boating without assurance that no harm to water purity or fish would result.

In some instances, surveys were conducted as a result of apparent loss of aquatic vegetation which, because of the operation of outboards, was attributed to this source. As such vegetation plays an important part in natural fish reproduction, careful analysis was made. In no instance, even where the body of water was limited in area, could the damage be attributed to outboard motor use. In some cases the damage resulted from drainage pollution by outside agencies or by chemical treatment of the water for weed or mosquito control. (Commercial Outboarder, Summer 1961.)